COAL AGE

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Without Women or Culm Piles

BY R. DAWSON HALL

OF ALL the national problems in Great Britain during the war, none has been more difficult than that of recruiting the labor forces of the war industries. The problem would never have been solved with any degree of success had women not been available to do much of the work.

It may safely be said that there is less danger in depleting the forces of our machine shops and the clerical and road-maintenance forces on our railroads than in reducing the forces in our mines. Women can run the lighter kinds of machines. They can operate, and have for years operated, telephones and telegraphs as successfully as men. They can handle express and even light freight and are doing so extensively in Great Britain and France. Already they are tamping ties in some states of this Union. But they cannot by any possibility, without a grievous shock to all our innate impulses, work in the mines. By stringent laws they are excluded even from working around such places.

Hence many lines of machine and railroad work and, be it added, farm work can be supplied with labor as soon as the labor forces are depleted, but mine work cannot be so supplied. For this reason, if for no other, mine labor, and especially anthracite mine labor, should be zealously guarded. The supply should never be allowed to dwindle. The draft should not for an instant be allowed to curtail the power of production of the industry.

Once crippled, it is hurt beyond recovery. There is no substitute labor force available. Only young men would have spirit enough to try the hazards of this new trade, and all such men have been drained away by the war. To older men living in cities or farming districts, the mines seem vested with a horror all their own. Thus the enterprising males are gone, and the women who are willing to undertake any kind of honest labor for the national advantage or for a generous wage are unavailable, because the industry is not permitted to accept their services.

It looks, therefore, as if accretions to the mining forces are unlikely. For this reason it is necessary to guard against depletions, certainly against further reduction in the working force. When the war broke out in Europe the anthracite region was quite short of men. New men ceased to come in. Many went to Europe to fight, and others went to the munition factories. The enlistment of men was followed by the draft, and now there is only 82 per cent. of the former scant force.

Up to the present time, the culm piles have made up the deficit. But this easy source of supply, afforded us by the labor of past generations, is fast being used up. Be it noted that the unsightly, but useful, culm banks hid the true situation from the public. We may yet for that reason regret that they ever existed. They have innocently disguised from a not too well instructed people the fact that the mine workers were being spirited away in numbers and were thus leaving flat on their back all the industries dependent on the coal that those mine workers were wont to produce.

Let us wake up to the situation and deduct the culm-pile product from the total and thus determine where the industry will be. Present coal production is not sufficient to meet requirements; it will be still less when the washeries have prepared the last pound of culm. Is it wise, therefore, to draft or enlist any more anthracite miners in the national forces? Anthracite production is slim to famine now; it will unquestionably be slimmer yet if remedial measures are not taken.

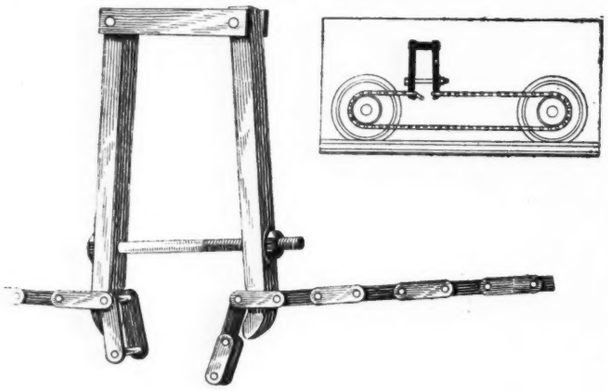
IDEAS AND SUGGESTIONS

Traction Chain Splicer

BY FRED W. SAKON
Johnstown, Penn.

On ordinary mining machines the propelling chains after they have been used for some time develop a certain amount of slack. If this is not taken up it will cause trouble through the chain slipping over the sprocket teeth. In other words, the chain slips a tooth.

A simple device for taking up slack and pulling the chain together in case it is broken can be made by a



SIMPLE DEVICE FOR TAKING UP SLACK

blacksmith in a short time. This requires two pieces of steel 1½ in. square by 12 in. long. One end is forged to pass through the chain and is notched to fit the bushing so as to prevent slipping out when pulling. Drill a 1 1/16-in. hole in the opposite end of both pieces, also in each end of two pieces of ⅜ x 1½ x 5-in. strap iron. These straps are bolted at the top end of the main hooked bars so as to form a hinge joint. Another 1 1/16-in. hole is drilled about two-thirds of the way from the hinge to the hook. This is to take a ½-in. bolt 9 in. long threaded 6 in. of its length, which acts as a drawbolt.

To use this device simply insert the chain puller in the chain and tighten up the nut. This draws the chain tight and a link may be removed or the chain spliced. The device eliminates the tiresome job of trying to pull the chain together by hand or with bars that may slip and possibly injure the man doing the work.

Combined Feed Cable and Trolley Wire Hanger

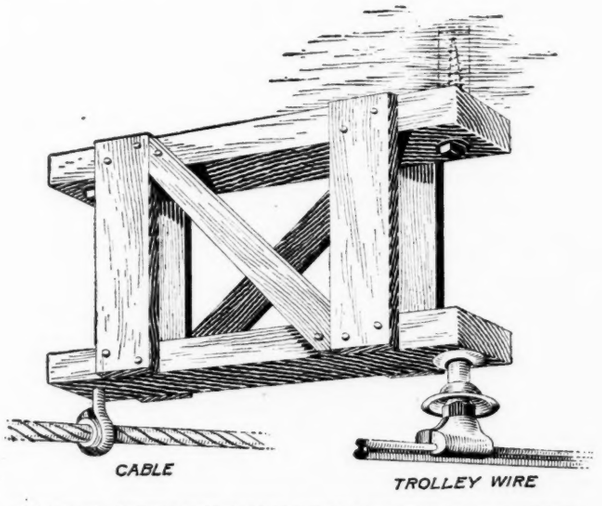
BY R. W. MAYER
Connellsville, Penn.

The United States Coal and Coke Co., of Gary, W. Va., uses one hanger to support both the trolley wire and the feed cable which supplies it with current. Two pieces of hard wood, about 3 ft. long, 3 in. thick and 6 in. wide, are used in making the hanger. One of these is fastened to the roof crosswise of the entry, by means of four lag screws. Two are sufficient when the load is not heavy.

Holes 1½ in. in diameter are drilled into the roof to a depth of 8 in. and wooden plugs driven tightly into them. The ends of these plugs are then cut off even with the roof. The holes for the successive hangers are kept in line by sights or by plumbing up from the rail.

By means of a templet the holes in the roof for each individual hanger are drilled the correct distance apart for the lag screws. Then, through the holes in the timber placed against the roof, the lag screws are driven into the wooden plugs already referred to. Lag screws ½ in. in diameter and 10 in. long are used. These hold the timber rigidly in position, the latter forming the support upon which the balance of the hanger is built. All the lag-screw holes and bolt holes are bored through the timber outside the mine. Templets are employed to get the holes in the correct position.

A second piece, the same dimensions as the roof timber, is supported by means of 1 x 6-in. lumber. Four of these pieces are used as upright supports, two being fastened on each side of the timbers about 8 in. from their ends. Each pair of uprights is placed on directly opposite sides of the timbers. The upper or top end of the upright is fastened to the roof timber and the lower or bottom end supports the lower timber by being



HANGER SUPPORTS BOTH TROLLEY WIRE AND FEED CABLE

fastened to its side. The height of the lower timber is maintained a uniform distance above the top of the rail throughout the entry. This is accomplished by varying the length of the 1 x 6-in. pieces. The trolley and feed wire are fastened to the lower cross-timber.

Cross-braces of 1 x 6-in. lumber are fastened X-wise between the uprights and connect the two cross-timbers. One piece fastened to the edge of both cross-timbers

on each side is usually sufficient. The ends of these braces are cut beveled, so that they will rest against the edges of the upright supports.

The ends of the hangers are placed as close to the rib of the entry as practicable. The trolley wire is fastened to the wooden crosspiece by the usual insulated metal hangers. The feed cable is supported by a metal hanger fastened to the lower timber near the end next the rib.

To Speed Up Development Work

By Harry Goodman
Duquoin, Illinois

In order to obtain the full benefits under the now commonly used panel system it is necessary to work out quickly the panel when once it is started. That this may be done, as much entry driving or development work as possible must be completed so that the panel entry will be driven to its boundary before commencing on the room.

Thus when all these rooms start to work together so much coal comes from this limited area that it pays to keep a motor parting or branch on the main entries between each (or every second) pair of panels. This means grading and laying a motor road. which necessitates a simple system of keeping such work up close to the face without stopping the entries during construction.

To begin with, the location of such partings should be determined in advance so that the main entry can be widened out to hold the parting while it is being driven. Secondly, where it is customary to keep the track only in the haulage entry, except for a turn through every second or third cross-cut to get the coal out from the back entry, exactly the opposite should be done so that the track will be kept up in the back entry from the end of the motor road. As soon as the main entry is up to where new panels are to be turned off construction work may be started in the now vacant haulage entry. This work can be completed easily, before the main entry has again advanced to another parting, and an hour's work will suffice to cut in the temporary track, over which the entry coal has come uninterruptedly, to the main line.

As there can be only six places (the main and right and left panel entries) ahead of such work the slight disarrangement of air should not be dangerous except in an extremely gassy mine. Anyhow, the great advantage is secured of doing the track and wiring when convenient while the development work continues all the time.

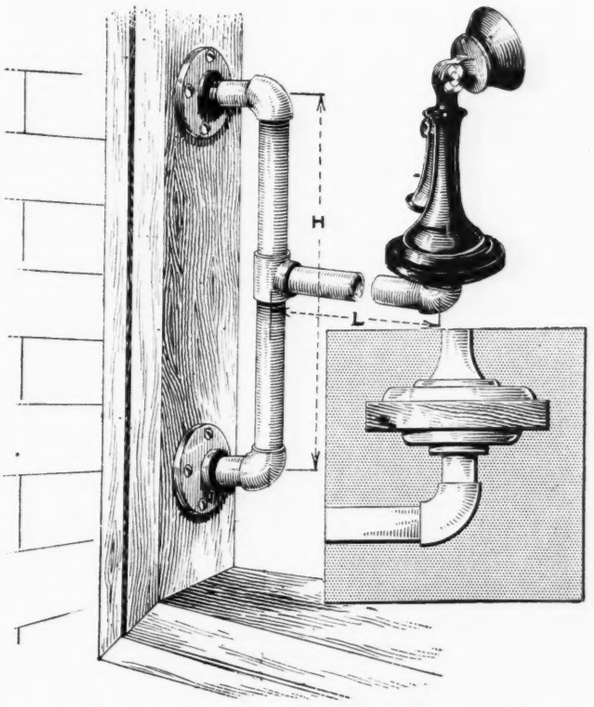
Light for the Drafting Room

It often occurs that a room not originally intended for drafting purposes is used as such and it is also frequently situated on the wrong side of a building, causing annoyance and inconvenience on account of the direct rays of the afternoon sun falling upon the drafting table. This condition may be eliminated, without sacrificing any of the light, by tacking or pasting a single thickness of tracing paper over the offending window. The paper diffuses the light without detracting from its usefulness, and is easily and quickly applied.—*Engineering and Mining Journal.*

Swinging Telephone Bracket Made From Pipe Fittings

By A. L. Renard

In a certain power plant the engineer's office was a small room in one corner of the building. A window in this office opened into the engine room. The engineer's telephone normally reposed on his desk in the office. But when he was in the engine room and a

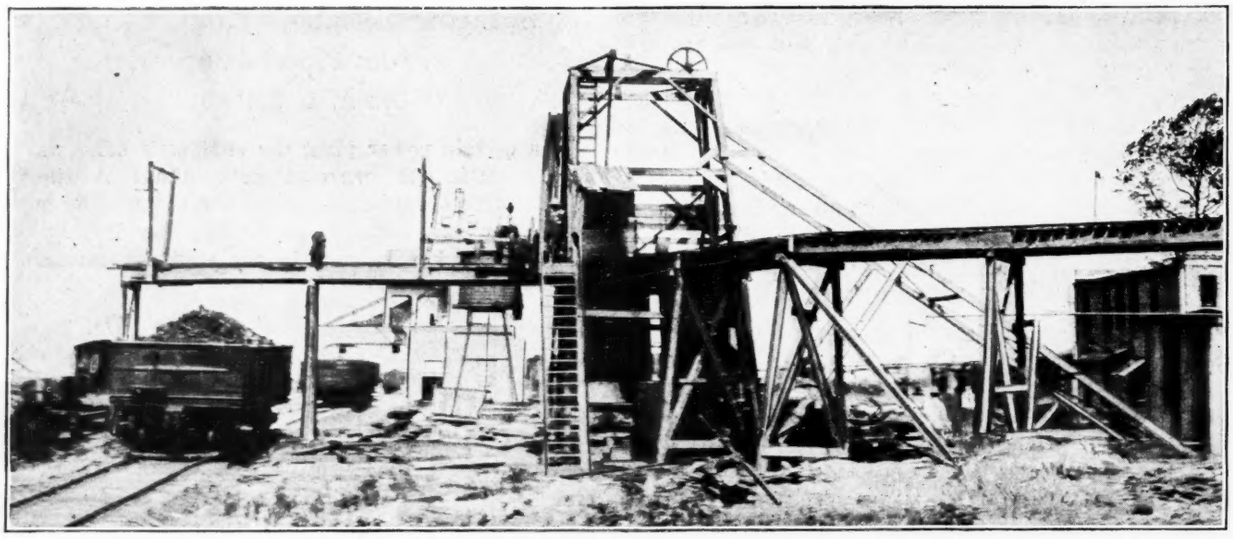


FIGS. 1 AND 2. SWINGING BRACKET AND DETAILS OF ARRANGEMENT

call came, it was his practice to reach through the window and pick up the desk set so that he could use it without having to go around through the door into the office.

The dangling telephone cord gave some trouble by catching on ink bottles and on papers, and finally became a real nuisance. Fig. 1 shows how the difficulty was eliminated by the application of a swinging bracket, which was, in odd times, made up of old pipe fittings, which were picked up around the plant. Fig. 2 indicates the details of the arrangement.

This drawing is almost self-explanatory. The distance *H* should, for satisfactory operation, be about 3 ft. The length of the arm *L* will vary according to conditions. For the bracket which is being described, this length *L* was such that when the telephone was swung into the office it assumed a position directly over the center of the flat-top desk. The base of the telephone was held to the $\frac{3}{8}$-in. wooden disk with straps of $\frac{1}{16}$ x $\frac{1}{2}$-in. sheet brass which are not shown in the illustration. The cord of the telephone was carried through a leather loop on the window frame in such a way that it swung with the arm and did not catch on things when the arm was moved. The idea may be adapted for use in many other instances.



TEMPORARY SINKING HEADFRAME AND TRESTLES AT SITE OF PROSPECTIVE MAIN KATHLEEN TIPPLE

Kathleen Mine of the Union Colliery Company at Dowell, Illinois

ON A tract of over 3000 acres about 5 miles south of Duquoin, Ill., development is well under way for a big 1000-ton-per-hour coal plant. There is no bigger operation contemplated or under construction in the state. Eugene McAuliffe, of St. Louis, Mo., is the president and general manager of the Union Colliery Co., the owner and operator of this new plant—the Kathleen mine.

The improvements already made give abundant evidence of the character of the new operation. Substantial up-to-date buildings are equipped with the most modern devices for handling coal efficiently and economically. Possibly the most striking object at the mine today is the reinforced-concrete tipple at the air shaft, the only structure of its kind in the Illinois-Indiana field. The main tipple will be of structural steel and will occupy the site of the temporary sinking outfit, which is south of the concrete tipple. Both air and hoisting shafts are through the coal, and the two shafts were connected up on June 8, 1918. Coal is now being hoisted to the surface through both shafts and loaded on railroad cars for shipment.

The concrete tipple was built to handle coal until the steel tipple could be constructed. Steel in large quantity for quick delivery is practically out of the question for most industrial requirements. In view of this the Union Colliery Co. used cement in the structure in question. This tipple will be available at any time later to handle 2000 tons of coal per day if need be, in the event of a temporary failure of hoist motors at the main shaft or stoppage of operations at the large tipple from any cause. The main shaft tipple is equipped with a one-car rotary dump and screens for making several sizes of coal. The mine cars have solid ends, roller bearings and a capacity of five tons.

In the face of most trying circumstances and during a winter of most unusual severity, work was prosecuted and the tipple built. Concrete was run with the thermometer at 24 deg. below zero without freezing. This was accomplished by housing-in the tipple with lumber and brattice cloth and using salamanders to keep up the inside temperature. In addition the water used in the concrete was heated (as were also the other component materials) by means of steam coils.

Men and materials will be hoisted through the shaft at the concrete tipple. This shaft also will be used for ventilation. It will be equipped with one double-deck cage for handling coal and materials on the lower deck, or 50 men on the combined decks at one time. This cage is counterbalanced with a steel frame filled with a concrete of cement and scrap-iron aggregate. The hoisting equipment consists of a Wellman-Seaver-Morgan outfit, with an 8-ft. cylindrical drum operated by a three-phase, 60-cycle, 2300-volt, alternating-current, 250-hp. motor. The motor is connected to the hoist by a Francke flexible coupling and Fawcus herring-bone gear. This hoist is air-controlled and is provided with overwind and maximum speed-control devices.

In the power end of the room is a 200-kw. motor-generator set transforming 2300 volts alternating current to 250 volts direct current. This electrical outfit is to operate six-ton Goodman locomotives. With the development of the mine the motor-generator sets will be carried below, having one set on either side of the mine. The engine and power house has concrete foundations, vitrified brick walls and steel roof trusses. Near the engine and power house is a 20,000-gal. water tank with concrete foundations and steel supports. This will supply water to the washhouse.

Near the power house is the outdoor substation constructed by the Delta-Star Electrical Co., of Chicago, Ill. The concrete brick building contains the oil switch equipment. The outdoor substation transforms a line voltage of 33,000 alternating current to 2300 volts. The inside substation eventually will contain switch boards and transformers for changing 2300-volt alter-

nating current to 220-volt current. During development 220 volts alternating current will be carried to the bottom through the air shaft on the high-voltage cables. Later 2300-volt current will be carried to the bottom, thence to a transformer located as close as practicable to the machinery, where it will be reduced to 220 volts. An extension of the air-shaft power house will be used as a boiler room and contain two 50-hp. tubular boilers. One boiler is to be maintained for heating water for the miners' washhouse and for heating the office and engine room in winter. The second boiler will be kept as a reserve.

A Jeffrey fan (5 x 12 ft.) is being installed close to the air shaft. The fan will be of steel, of reversible type and be housed in a concrete, vitrified paving brick building. The fan motive power will be a 200-hp. alternating-current motor. An emergency fan drive will consist of an 80-hp. steam engine.

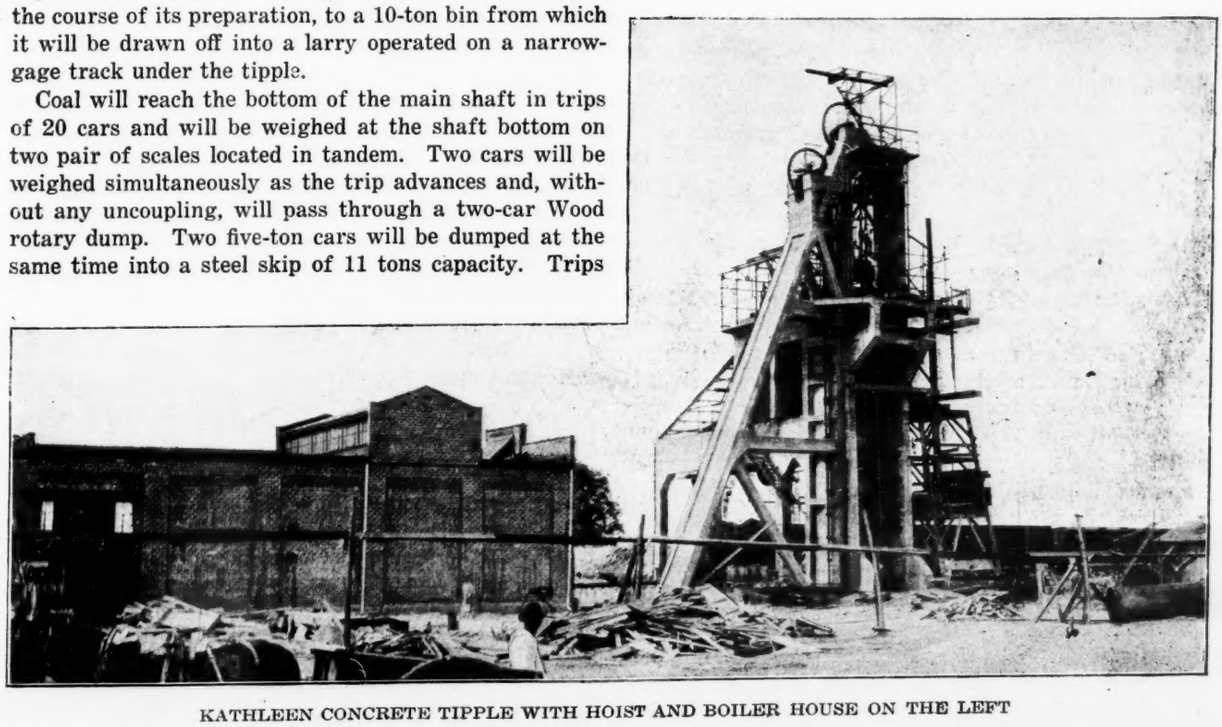
The air shaft is 12 ft. by 26 ft. 4 in. inside dimensions. This shaft is lined to the rock with 2½ ft. reinforced concrete, which serves as a foundation for the tipple. Below the rock the concrete lining is from 6 to 18 in. thick, depending on the strata. Steel H-beam buntons are embedded in the concrete. The air shaft has an air compartment 8 ft. by 8 ft. 6 in. and a hoist compartment 8 ft. by 12 ft. 6 in.; the remaining space contains a stairway and a compartment for the counterweight, electric cables and pipe lines.

The main shaft is 11 ft. by 19 ft. 1½ in. inside dimensions. It is 250 ft. from the surface to the bottom of the coal seam at this shaft. The thickness of concrete lining and its construction is the same as in the air shaft, and the steel buntons are bedded in the concrete the same as in the other shaft. The steel tipple will rest on the heavy concrete lining, extend over four railroad tracks and make the several grades of coal generally made in Illinois. The tipple will be equipped with shaker screens and three picking tables. Conveyors will carry refuse, separated from the coal in the course of its preparation, to a 10-ton bin from which it will be drawn off into a larry operated on a narrow-gage track under the tipple.

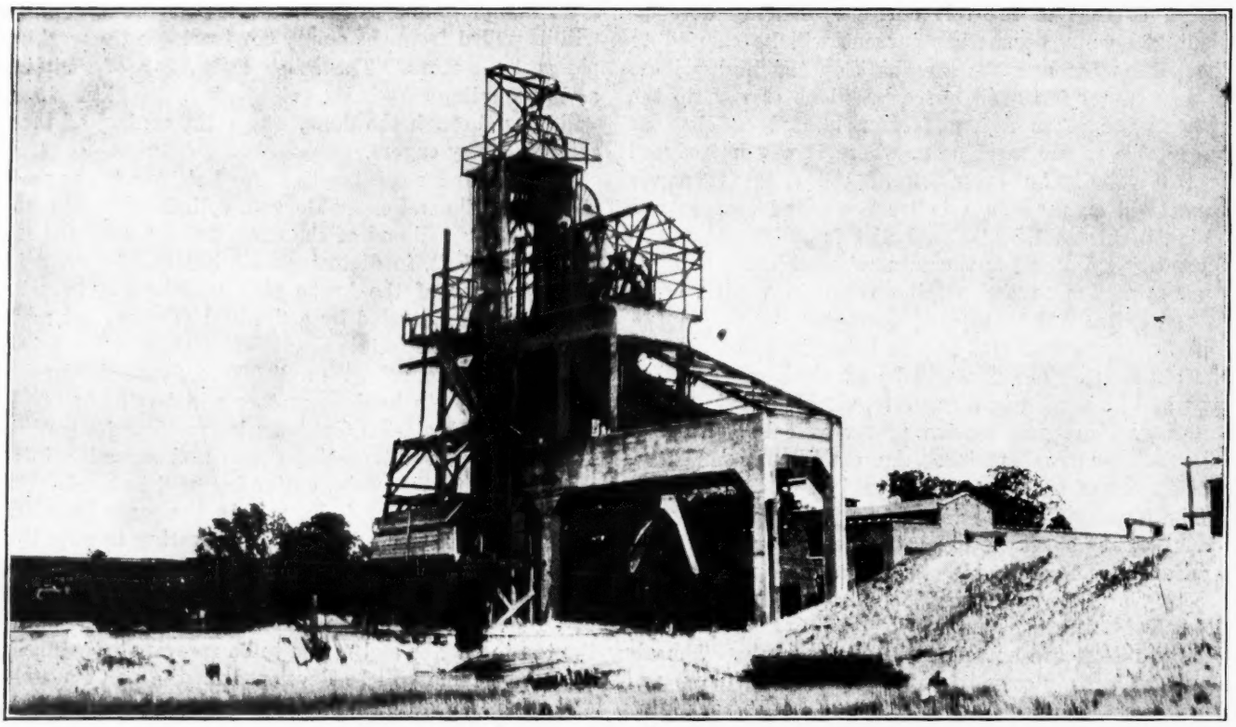
Coal will reach the bottom of the main shaft in trips of 20 cars and will be weighed at the shaft bottom on two pair of scales located in tandem. Two cars will be weighed simultaneously as the trip advances and, without any uncoupling, will pass through a two-car Wood rotary dump. Two five-ton cars will be dumped at the same time into a steel skip of 11 tons capacity. Trips after dumping, and without the necessity of recoupling, will be pulled from the empty car tracks to the working places by motors. The labor and delay of coupling and uncoupling cars is thus eliminated. The loaded trip will pass through the dump under the control of three sets of Lepley cagers.

There is under construction, for hoisting at the main shaft, a Wellman-Seaver-Morgan, cylindro-conical drum hoist. The small end of the drum will be 8 ft. and the large end 11 ft. in diameter with a face of 5 ft. 3 in. The diameter of the brake ring will be 10 ft. This hoist is to be operated by a flywheel (Ilgner) set made by the General Electric Co. This electrical hoist is a 600-kw., 500-volt set with a 20,000-lb. flywheel. Underground the main haulage motors will be 18- to 20-ton machines with six-ton Goodman locomotives for gathering. Goodman alternating-current shortwall mining machines with 7-ft. 6-in. cutter bar will be used. The mine track will have 40-lb. rail on the main lines and 20-lb. rail in rooms. It is also interesting to note that steel ties will be used on mine tracks. The No. 6 seam averages 8 ft. 3 in. in thickness at this mine, and 1 ft. to 1½ ft. of top coal will be left up to protect the top in entries and rooms to be recovered on retreating. The mine will be developed on the panel system, and where conditions are favorable the pillars will be recovered.

The track construction at this new plant is somewhat unique for this flat country. The track is 5 ft. above the flood line in the creek bottom. As the expense of a gravity grade was considered prohibitive, the track was planned without a grade with the exception of 800 ft. of track extending from above the air shaft to 100 ft. below the track scales. Cars will be moved by gravity on this grade. Empty and loaded cars in yards above and below the tipple will be moved by a narrow-gage steam locomotive operating between storage tracks. A suitable device on the locomotive engages



KATHLEEN CONCRETE TIPPLE WITH HOIST AND BOILER HOUSE ON THE LEFT



SOUTHWEST VIEW OF KATHLEEN CONCRETE TIPPLE

the end sills of cars, moving ten empties at a time to a point where they are handled by gravity. Subsequently the loaded cars are moved back five at a time, thus making car control independent of load, bad brakes, freezing weather and other adverse conditions.

A shop and store room 40 x 120 ft. at the first story has been constructed of concrete vitrified paving brick and steel roof trusses. The shop is covered with a tile roof and is equipped with a 30-hp., alternating-current motor operating a power hammer, lathe, drill press, planer, iron and wood saws, blowers, emery wheel, etc. At one end of this building is a second story with 40 x 40-ft. floor space, containing mine offices with separate fireproof vaults for engineer's and office records. Below one end of this second story and next to the supply room are the offices of the storekeeper and time clerks.

Two 150-ton railroad track scales—50 ft. long, of concrete and steel—to weigh coal are installed; these scales are on parallel tracks below the tipples. The Central Illinois Service Co. will furnish power, having built a 33,000-volt line from Royalton. A town site of 360 acres has been purchased and laid out in building lots. Part of this tract is covered with a fine growth of timber, six acres of which are to be improved for park purposes and provided with recreation equipment for the children. This new town is to be called "Dowell" and has under construction at present a hotel, brick store building and 25 houses.

The public utilities connected with this company will furnish a market for the entire output of the mine. The main office of the concern is at St. Louis, Mo., with branch offices at Milwaukee, Racine and Kenosha, Wis., and Detroit, Mich. This company also owns the Western Kentucky Coal Co., which operates nine mines in western Kentucky, with the largest fleet (300 barges) of barges on the Ohio and Mississippi Rivers. It is about the only river company left. The local officials of this company at the Kathleen mine are Edward Bottomly, general superintendent; Charles Gottschalk, chief engineer; Robert England, top foreman, and James Wilson, mine manager.

Test on a Jeffrey Fan

By W. D. Owens
West Pittston, Penn.

The Lehigh Valley Coal Co. recently erected a ventilating fan of the Jeffrey type at its No. 10 tunnel, Campbells Ledge Mines, on which I had the privilege of making a test on July 1, 1917. I found conditions as follows: Diameter of fan, 7 ft. 11 in.; width of fan, 4 ft. 1½ in.; including the rims to which the blades are attached at the outer end and also the center plate.

The test was made in vacuum; that is, the mine was walled off so that no air could enter the fan. The fan then ran at 136⅔ r.p.m. The theoretical depression produced by such peripheral speed per minute, according to Daniel Murgue's theory, equals $\frac{V^2}{G}$ found as follows: The peripheral speed was $\frac{7\text{ ft. }11\text{ in.} \times 3.1416 \times 136.66}{60} = 56.64_3$ ft. per sec. The barometer reading during the test was 29.60 in., and temperature equaled 76 deg. The weight of the air per cubic foot was consequently $\frac{1.3253 \times 29.60}{460 + 76} = 0.07318$ lb. Hence $\frac{56.643^2 \times 0.07318}{32.16 \times 5.2}$ 1.40 in. of theoretical pressure or water gage.

Two water gages were used, and each agreed with the other, both showing 1.18 in. of pressure. The fan thus developed an actual pressure equal to $\frac{1.18}{1.40} = 84$ per cent. of its theoretical capacity. This is the best

result I have ever obtained from many experiments. The fan was then tested while ventilating the mine. It then ran at 132 r.p.m. and produced a mine depression or water gage of just 1 in. The theoretical depression at this speed is found as follows:

$$\frac{132 \times 3.1416 \times 7.916}{60} = 54.71\ ft.$$

and

$$\frac{54.71^2 \times 0.07318}{32.16 \times 5.2} = 1.309\ in.$$

Therefore the fan produced a water gage of $\frac{1}{1.309} = 76$ per cent. of the theoretical depression. This was a splendid result, particularly so considering the great volume of air the fan produced. Several tests showed this quantity to be not less than 110,000 cu.ft. per minute.

The fan is driven by electric power, and during the test when the fan was running in vacuum it required 8 hp. to operate it; but when ventilating the mines, running at 132 r.p.m., it consumed 33 hp. Now the horsepower in the air circulated was as follows:

$$\frac{110{,}000 \times 5.2}{33{,}000} = 17.3\ hp.$$

And this proves, as might be expected, that there is no definite relation between the horsepower circulating the air through the mines and the horsepower required to operate the fan. It is true that the horsepower developed in the air by a fan of the Guibal type is relatively nearer to the engine power, simply because of the inability of this type of fan to produce a large volume of air and at the same time to produce a high percentage of mine depression compared with the theoretical depression. The Guibal types of fans in general are only able to produce their own cubical contents, even when operating in the open atmosphere, and much less when applied to actual ventilating of the mines. But the Jeffrey fan, as shown by this test, produces considerably more.

The total width of this fan was given heretofore as 4 ft. 1½ in. This dimension includes the circular rim on each side of the fan to which the blades are fastened, also a plate in the center of the fan. This leaves the actual unobstructed width of the fan, which forces the air out, as 3.56 ft. The diameter of the fan as previously stated is 7 ft. 11 in.; therefore, the cubical contents of the fan space is 175.9196 cu.ft., and this multiplied by 132 revolutions equals 23,221.389 cu.ft. The quantity of air produced by this fan was previously stated as being 110,000 cu.ft.; therefore, the fan produced 4.73 times its own cubical contents; and even if the "rims" and center "plate" are calculated into the volume of this fan, taking the width as 4 ft. 1½ in. its volume would be 203.81 cu.ft. and this times the revolutions per minute or 132 = 26,900 cu.ft. Thus this fan produces $\frac{110{,}000}{26{,}900} = 4.08$ times its own cubical contents of air.

This fan has quite a number of blades, some short and some long. I do not know whether there is any advantage in the principle of long and short blades; but I am sure there is considerable benefit in putting in a great number of blades. D. W. Evans of Pittston, Penn., has constructed a fan with numerous blades, their depth being only 5 per cent. of the diameter of the fan. These blades are attached to a rim and central plate, at an angle of about 30 deg. This fan also produces about four times its own cubical contents per revolution, and should be put on the market.

Out on the dump will go your job and mine

How About It?

Written Expressly For "Coal Age"

By BERTON BRALEY

Joy in Berlin

Your job and my job—how much do they mean?
What is our place in the wartime machine?
Are we essential, and do we produce?
For, if we don't, we are simply no use;
Worse, we are brakes that impair and impede,
Hampering progress and vigor and speed.
If we don't fit in the mighty design,
Out on the dump will go your job and mine!

Your job and my job—how well are we placed?
What do we represent, Service or Waste?
Miner and manager, checker and clerk,
How are we handling our share of the work?
Slackers aren't lasting long, over the foam,
This is no time to have slackers at home,
We must be faithful as soldiers in line
Else there's a finish for your job and mine.

Your job and my job—the Nation demands
All we can do with our heads and our hands.
Don't think this war is for others to win,
You and I, brother, have got to fit in;
Each hour we loaf and each task that we slack
Weakens the force of our country's attack,
There is rejoicing far over the Rhine
When we let up upon your job and mine!

Your job and my job—they're worthless and vain
Save as we labor with muscle and brain,
Striving to serve at the top of the breast,
Each of us toiling his hardest and best.
Let us be part of the great honor roll,
Soldiers who fight with the Army of Coal,
Giving our all with a zeal that is fine,
Your job and my job for your land and mine!

The Cost of Coal

SYNOPSIS—*Many factors enter into the expense of producing coal. Some of these are capable of decided reduction from present averages. Others, such as the cost for labor, may be reduced through stabilization. Intensive mining would result advantageously to all concerned.*

FOR analysis, the cost of coal may be divided into promotion, royalty, equipment, labor, distribution and profits. Promotion comes too cheaply, general opinion to the contrary notwithstanding; but the service rendered is small. While, if properly performed, the direct charge for promotion would be increased, thousands of dollars paid in litigation now charged to "cost," and many more thousands considered a legitimate hazard of mining, would be cut off the price of fuel.

To make this economy it is necessary to employ an attorney of recognized standing, an experienced operating official, and a competent engineer. These three should be given definite instruction to include in all deeds, specifically, all rights necessary to mining and prospecting, including release from all damages resulting, so written as to be legally defensible. At no later time can these rights be so cheaply acquired, and if they can be had in no other way the property should be purchased in fee simple.

During the term of the option the mineral should be thoroughly prospected. My experience would dictate a prospect to each 100 acres. This provision alone would have saved in the past millions invested in comparatively worthless lands. A property survey (if extensive, on a triangulated base) should be made, the field locations compared with title plots and all reservations definitely described and located. Property which has been surveyed in recent years should be purchased by the acre, according to the company's location, while parcels which have not been measured within a half century should be purchased in the lump. The cost of all this will be recovered in the royalty.

Preliminary Knowledge Is Important

Before any attempt is made to develop, a topographic survey should be imposed on the property map, showing all buildings, streams, highways and surface contours less than 100 ft. above the topmost bed of coal. The entire field should be projected for mining so as to determine where and how many openings shall be made. This will save thousands of dollars frequently wasted by haphazard location of mines and improper projections.

From the data collected there can be determined the probable life of the field and the net acreage, after deducting barren, unmerchantable and unrecoverable coal. By use of these two factors the amortized royalty per ton can be calculated.

By recognition that fuel is one form of wealth which can never be replaced, and that rather than force its exploitation the process should be discouraged, society can do its bit by exempting all undeveloped coal from taxation. On the other hand, developed coal should be taxed enough to stimulate its prompt recovery, and a surtax should be charged against lost coal in exhausted areas, to force thorough mining.

Before striking a pick the last detail of a proposed mine should be determined and the work should be developed in logical order. First comes the railroad, then the village with water-works, store, etc., then the mine and so on. A modern power plant designed to utilize the lowest grades of near-fuel is required. A mine too small for a power plant of advanced design should purchase its power, and a power plant with antiquated equipment should be scrapped. Electric distribution should by all means be employed.

Delays for Supplies Are Expensive

Where a well-stocked supply house is not maintained, much money is lost in waiting. On the other hand, where one is handy it is apt to be wasteful. A careful check on all supplies and small tools will well repay the expense; every old machine part should be exchanged for a new one, and the worn part should then be examined by a responsible man and refitted, or put in the junk shed. Please note the shed; the tons of junk lost or stolen, if known, would be staggering.

Mine tracks are too light, too poorly graded and aligned, and the bonding is "rotten." Heavier rail and the same track maintenance that a railroad receives would pay big dividends. A pit for annealing old rail would help cut expenses. Why the rail on main hauls is not welded for bonding is a mystery; there are no temperature changes for which to allow.

Mine repair shops as a rule depend too much on hand labor, and I believe large companies lose by not doing more rebuilding for themselves. Large companies should produce their own timber, sand and crushed stone. Possibly a brick kiln would pay.

Small mine cars and few of them (to say nothing of obsolete trucks) is the rule, I believe, because the miners' time seems to cost nothing to the operator. Cars should be plentiful and placed promptly by locomotive. Without wearisome listing, I know of few mines that use enough machinery or have enough of the kinds they do use. An extra machine, as well as repair parts, is always an economy.

The tracks under the tipple should be graded so as to get a free movement of cars in the winter. In cold climates fills rather than cuts on all outside grading will save much labor. I must confess a leaning toward the rotary dump of full trip capacity.

Insurance can be saved by fireproof construction. This need not necessarily be expensive. To get a 100 per cent. return on the investment, all equipment should be operated as nearly 24 hours a day as necessary repairs and overhauling will permit. I know how hard it is to operate a night shift. But why a night shift at all? Take a hint from those industries which must operate continuously and have an early morning and a late afternoon shift; then change shifts each week. Don't forget depreciation and obsolescence and charge enough therefor.

Insufficient equipment and inadequate supervision are responsible for many inefficiencies in coal mines, rather

than the basis of payment. Intermittent operation has been caused by an insufficient car supply and an excessive number of mines. The present high earnings of coal miners are due to the establishment of rates which would give an average miner a living under spasmodic working conditions. In order to correct these it will be necessary to insure full-time work. I expect our Uncle Sam will take care of the car supply; and if the Fuel Administration takes full advantage of its powers before normal industrial conditions are resumed, the superfluous mines will have been wiped out.

In order to radically reduce the cost of digging coal, the change will probably have to be "camouflaged" to avoid serious disturbances. I would suggest a task and bonus system. All men on a day basis and many "company" men can be cut off and the work done on idle days, thus steadying the employment, if necessary. A wage must always be sufficient to keep an adequate working force. For mine work, I imagine we must pay average wages for the class of men desired, plus something to overcome living conditions.

Welfare Work Is Important

Assuming that most of the work about the mines can be done by unskilled labor, it is necessary to gather statistics to show what common labor actually gets in other industries. To this wage should be added the same percentage figured against mining by insurance companies. Man is a pleasure-loving animal, and the less his culture the more he depends on outside sources for his amusement. This is the reason why the average laborer prefers city employment. To overcome this prejudice another allowance is required. If he is to be held any length of time, so-called "welfare" work must be instituted.

By welfare work I don't refer to the maudlin stuff which now passes muster. Everything attempted by a company should be on a strictly business basis definitely understood by all. The reason the company does thus and so—is because it pays.

I would recommend that the housing (in style and type) be the equal of any found in any "open" town of similar size. The streets should be kept up similarly, and sanitation should be pushed to an extreme. All this can be collected in rent.

Public amusements will pay their own way and should be fostered for men, women and children. Education should be encouraged, especially for adults; this may cost the operator some money, but it will be returned a thousandfold in the increased efficiency and number available of petty officials.

I would caution against trying to get wage increases back in company store profit. A company store operated on a narrow margin, managed by a "merchant," and served by real salespeople, would become one of the greatest assets for goodwill an operator can possibly obtain. I have yet to see that kind of store.

One of the gravest wastes in the coal mines is the use of skilled miners to shovel coal. A real miner is as highly skilled as any kind of mechanic. The normal wage he gets is probably not excessive in comparison with other skilled labor. Instead of spending three fourths of his time at work that any navvy can do, he should act as squad leader to several. On the average, in machine mines, one miner to eight navvies would be about the right proportion. This squad, provided with a mining machine, a gathering locomotive and plenty of cars, would revolutionize the output.

A foreman should be provided for as many men as he can conveniently visit constantly, not once or twice a day. He should be paid more than he can earn as a miner. The general foreman and assistants should confine their attention principally to transportation and supplies, and their duties should be restricted to the inside of the mine. Adequate supervision today is a hard problem, mostly because of the ridiculously low salaries paid, but partly because most practical miners rarely have any education. This takes us back to the school problem.

It would pay any coal company to make a special effort to train officials. An apprentice system, made the avenue to promotion, wherein each candidate would serve about a year in each department, whose activities he will touch in later work, is a necessary innovation.

To be eligible to promotion a certain minimum of schooling, or its equivalent, should be required. For instance, a mine foreman should be able to pass an examination in common school branches; a superintendent should have the equivalent of a high school training; an engineer should at least be able to pass the examination for engineer in the Government service.

The functions of officials above pit boss should be specialized. The system of mining should be left entirely to the engineer and safety to the mine inspector. The superintendent being the instrument through whom they work, both should be superior to the superintendent, and of course more highly paid.

Mining ought to be limited to the highest grade of fuel which is of sufficient quantity to fill the demand. This could be accomplished by requiring the operator to pay the freight on the ash content, plus a graduated penalty on all impurities above a fixed maximum. An operator who could not compete on this basis, if he found it impossible to prepare his product profitably and make it come within the specifications, would have to shut down until exhaustion of better fuels brought his up to grade.

Delivery Expenses Are Heavy

Cross-hauling is a waste recently brought to public attention, but I venture to say that the loss through freight cross-hauls is only a fraction of the loss from competitive retail delivery. Probably the use of waterways would cut the freight charges on coal. Domestic consumers who persist in ordering their fuel during the winter months ought to be penalized.

Sales agents should be abolished. There is no reason why the large consumer and the retailer can not deal directly with the mine operator. A fuel engineer who would be able to specify the kind of fuel best suited to individual conditions and name the producers capable of supplying that grade could be jointly supported by the operators logically contributing to a consuming center.

Finally there must be a profit. Capitol is unconsumed wealth. Without capital our present civilization—well, there would be "no sich animile." Unless we offer an inducement, no one will lay aside any of his production. Not being an economist, I will leave the wages of capital for someone else to settle, and will content myself by saying that it must be enough and should not be more.

To treat so vast a subject requires many volumes and many brains. I have condensed this contribution almost to extinction, and it sounds much more dogmatic than I feel. The points I wish to emphasize are:

Mines are generally opened with insufficient data for an engineer to work intelligently. Lack of surface rights adds an enormous burden to the industry, as it is forced to pay damages on valuations that the operations themselves have largely created. This should be remedied in operating properties as soon as possible and new developments should avoid such errors. Coal mining is not carried on as intensively as it should be. In brief we should adopt modern factory methods. More supervision is urgently needed, and a higher standard should be set. Living conditions must be made to compare with those available in other industries.

How Far Does a Belt Slip?

By W. F. Schaphorst
New York, N. Y.

Not long ago I read the following statement in a technical publication, "It is obvious that the chief wear on belts is occasioned by their swift curling and uncurling motion around the pulleys." It is true that this is possible in belts that contain no internal lubricant. If the belt is dry, the fibers rub against one another with considerable friction, and consequently the wear will be great for the same reason that an unlubricated bearing will wear more rapidly than will a lubricated one. This holds true even with ball bearings. But if the belt is properly treated with a preserving lubricant similar to the natural lubricant that is in the hide while on the animal, the internal wear is small indeed. Experience with dry and treated belts bears out these statements, and I believe the author of the quotation given above will agree with me.

While thinking this over, however, the fact developed that there has been given no formula, in textbooks or elsewhere, for computing the distance a belt slips or creeps in a given time—a year, for example. I thought it might be because the total slip for a year is a small amount—not worthy of much thought—but after doing a little rough figuring my eyes opened to the astounding figures that resulted.

Let us take an example. A 4-ft. pulley rotates at the rate of 250 r.p.m. Its belt does not slip, but the creep is 2 per cent. It is used 10 hours per day during 300 working days in the year. How far does it creep per year?

Multiply the 4 by 3.1416 and then by 250 and we find the pulley travels 3141.6 ft. per minute. Multiply this by 2 per cent. and we find that the belt creeps (this is sometimes erroneously termed "slip") about 63 ft. per minute. That immediately looks like an almost impossible amount, but it is true nevertheless. This is equal to 3780 ft. per hour, 37,800 ft. per 10-hour day, or 11,300,000 ft. per year of 300 working days—a total of 2140 miles.

Does it seem strange now that belts wear out? Isn't it remarkable that belts last as long as they do? And isn't it plain that pulleys should be smooth in order that the wear may be reduced to the minimum? Two thousand, one hundred and forty miles of rubbing even on a smooth pulley is considerable. And if there is any slip on the pulley in addition to the creep the matter is all the more serious.

It must be remembered, however, that a given point on the contact side of a belt is not in contact with the pulleys all the time. During each complete trip of the belt around the pulleys the given point is in contact with one pulley for a short time during which there is a rubbing action to some extent, then the given point is not in contact with anything until it reaches the next pulley, when it again rubs. The greater the distance between shafts, then, the less the yearly slip or creep of the given point. Thus if we could connect a driving pulley on the earth with a driven pulley on a distant star a given point on the contact side might not touch a pulley for several years, even when running at the speed of the belt cited in the example above. Such a belt should last millions of years, were the length of life dependent solely on friction. A short belt, on the other hand, is subject to greater punishment because the given point comes in contact with the pulleys frequently.

To aid in computing the slip plus the creep of a point, taking into account the radii of the pulleys and the distance between shaft centers, I have developed the following rule:

Multiply the "total yearly slip of the belt" as obtained above by 3.1416, and then by the sum of the radii of the pulleys in feet. We will call this amount "A." Now multiply the distance between shaft centers in feet by 2, and to it add the product of 3.1416 multiplied by the sum of the pulley radii in feet. Divide "A" by this sum, and the quotient is the total number of feet a given point slips and creeps in a year's time.

For example, let us assume that in the problem above the distance between shaft centers is 30 ft. and the pulley radii are 1.5 ft. and 2 ft. respectively. What is the total creep of a given point on the contact side of the belt in a year's time?

Adding the radii we get 3.5 ft. Multiplying by 3.1416 we get 11. Multiplying that by 2140 miles we get 23,540 miles, which we call "A." Now multiplying 30 by 2 we get 60, and multiplying 3.5 by 3.1416 we again get 11. Adding 11 and 60 we get 71. Lastly, dividing 71 into 23,540 miles we get 332 miles as the total slip of a given point per year.

For the convenience of those who prefer rules of this kind in the form of an algebraic equation, we have the following:

Yearly slip plus creep of a given point on a belt =

$$\frac{3.1416DNSM(R+r)3.1416}{[(R+r)3.1416+2L]5280}$$

where

D = Diameter of the driving pulley in feet;

N = R.p.m. of the driving pulley;

S = Slip plus creep of the belt;

M = Number of minutes belt is operated per year;

R = Radius of driving pulley in feet;

r = Radius of driven pulley in feet;

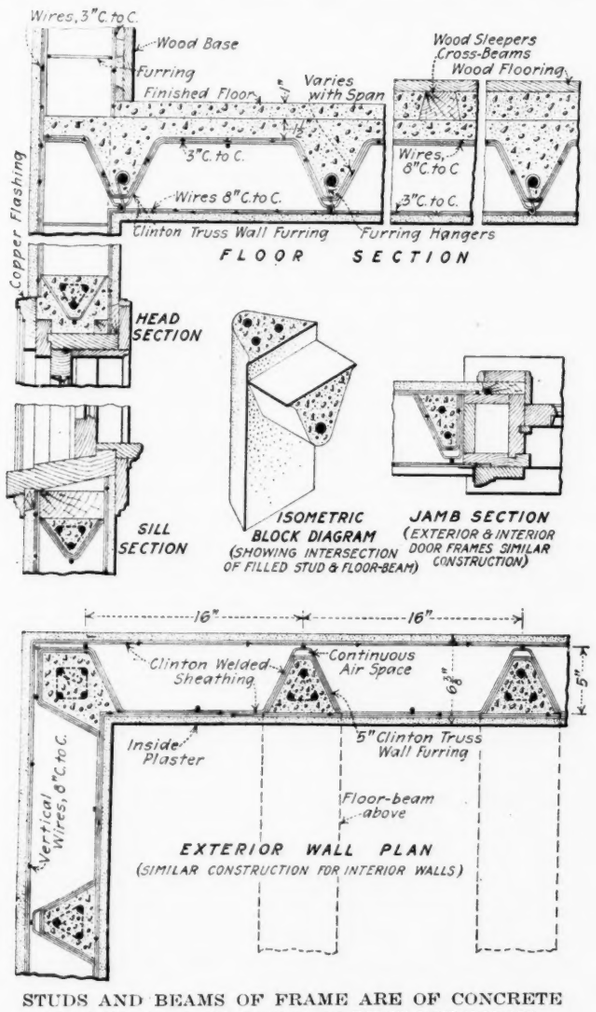
L = Distance between shaft centers in feet.

This, then, explains why belts wear out. It can well be imagined that if a belt is dragged along on even a smooth surface such as found on pulleys for a distance of 332 miles there is bound to be some wear and this would be equal to the yearly wear on the belt.

Two All-Concrete House Designs*

SYNOPSIS—*Forms made of wire cloth, an ingenious way of keeping water from the inside of a concrete house and a system of incorporating precast beams integrally into the house structure are here described.*

THE great need for houses throughout the industrial and shipbuilding centers of the country has led to the preparation of a number of designs providing safe and comfortable homes at reasonable cost and lending themselves, at the same time, to quantity construction. Among these are two embodying somewhat similar details. Both of them plan to use concrete or concrete and plaster throughout. They have reinforced-concrete frames with double walls of stucco and plaster, all erected with a minimum use of forms or stages.



STUDS AND BEAMS OF FRAME ARE OF CONCRETE POURED INTO SHEATHED WIRE-CLOTH FORMS

Two experimental houses are now being built, in accordance with one of these designs, near a mill of the Pennsylvania Cement Co., at Bath, Penn. Sheathed wire cloth is used to construct the forms into which to pour the concrete units making up the house frame. The type of construction has been named the "Alcho System" and is being developed by Albert Oliver, of the Clinton Wire Cloth Co., New York.

One of the fundamental elements in the design of the house is its triangular reinforced-concrete studs. These studs support on the inside a plaster wall and on the outside a concrete-stucco facing, an insulating air space being left between them. Each stud carries floor and roof beams of similar triangular design, and integral with these beams is a reinforced-concrete floor or roof.

The studs are erected on the concrete walls of the cellar or basement, the forms for the studs being continuous sheets of Clinton welded sheathing, which is a building paper woven into a wire cloth. This is bent to the shape of the studs to be formed, and the concrete is poured inside.

Outside the sheathing are rows of furring rods which project beyond the apex of the stud triangle and to which are fastened the sheathing, making the inside form for the outer wall. This leaves a small air space at each stud, preventing water even at these points from permeating into the wall. The base of the stud also has sheathing against which the inner wall is plastered.

The beams are varied in depth according to the span required. They, too, are cast within sheathing forms, the sheathing being supported on struts during construction. Hangers left in the beams carry furring on which the ceiling is plastered. The floor itself is poured so as to be integral with the beams and can be finished as desired.

The wood-frame doors and windows are detailed as shown in the drawings. The stairs are of concrete, and the partitions are of concrete or plaster applied on wire cloth. The roofing, where the roof is flat, will be of fire-resistant material placed on a concrete slab. It will probably be placed on timber framing where the roof is sloping.

It is intended that the houses now being built at Bath, in accordance with these designs, shall be of poured concrete with hand-plastered walls and partitions. Provision is made, however, for the use of the cement gun in placing the concrete, in which case the studs are turned with the base of the triangle outward to facilitate placing.

In the other type of house, which has been devised by John V. Schaeffer, the president of the Cement Gun Construction Co., Chicago, the studs and walls will be built entirely by the cement gun, while the beams will be precast concrete and the floors will be poured in the usual manner.

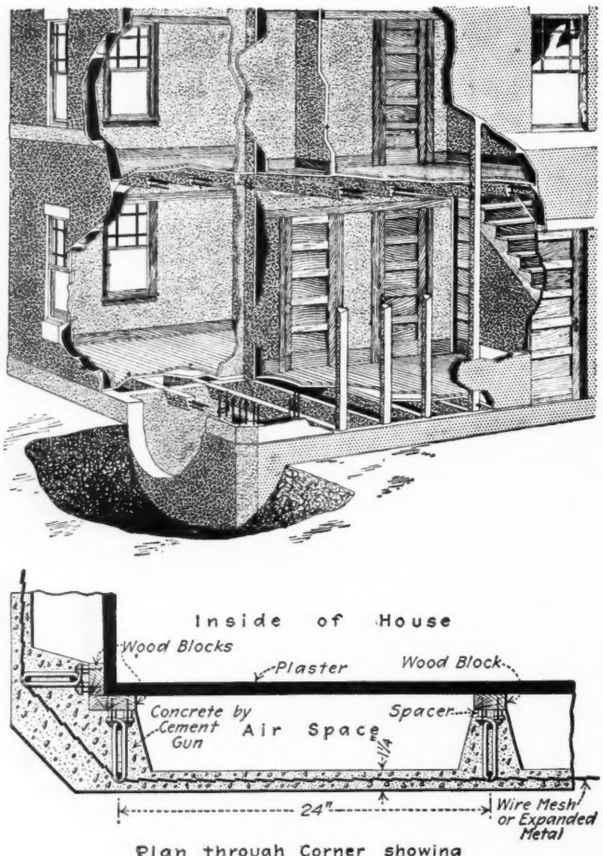
On the page following a sketch is shown of the broken corner of a proposed house of the cement-gun type with all elements of construction in view, and a horizontal section through the wall with the details of a characteristic design. This wall structure comprises studs on 24-in. centers integral with a 1¼-in. outer wall

*Article entitled "Two New Designs of Concrete Throughout" appearing in "Engineering News-Record," May 16.

and separated from the inside plaster wall by wood blocks fastened both to the studs and to the wall, leaving an interior air cell for insulation against temperature and moisture.

In building the house a cellar is first excavated, and cellar walls are built in the usual manner except that recesses are left in which are set the precast joists for the first floor, spaced on 24-in. centers to match the studs. On this frame as a platform subsequent construction is carried on. A temporary timber framework is then erected on the platform, and the wood blocks of the studs are then set up. The reinforcement, as shown in the floor section herewith, is attached to these wood blocks before they are erected.

After the reinforcing fabric of the wall is placed, the walls and studs are shot with gunite from cement



WALLS AND STUDS ARE SHOT WITH THE CEMENT GUN AND BEAMS ARE PRECAST

guns. When the upper floor is reached, precast beams are placed with protruding reinforcement which is intertwined with the reinforcement of the studs. Connection is made by the use of the cement gun. Plastering, or wire mesh, is then placed on the inside wall and belt courses are shot around the tops of the studs so that all air spaces are isolated at each floor, and after the plastering is in place each air space or cell is a unit. This is designed to prevent circulation of air or migration of vermin.

To provide the backing, against which the cement-gun concrete is formed, several methods have been proposed such as the use of separate unit forms which can be used over and over and the employment of sheathed wire fabric. In the latter case the fabric, being inside the wall, can be left in place.

The system followed in either scheme of operation can be varied to suit the details of the layout and the architectural treatment. It is stated that reliable contractors have submitted estimates of cost, which though higher than are customary for lumber construction compare favorably with the actual cost of the cheaper type of brick house with wood floors. The method is less costly than that followed in the erection of most fire-resisting buildings.

Shipments of Anthracite for May, 1918

The shipments of anthracite for the month of May, tion at Philadelphia, amounted to 6,887,256 tons against 6,917,525 tons in May, 1917, and 6,368,373 tons in April of this year. The shipments last month, therefore, show 1918, as reported to the Anthracite Bureau of Informa- an increase over April of 518,883 tons, but a decrease as compared with May a year ago of 30,269 tons. This decrease as compared with last May, under ordinary conditions, might be considered insignificant, but a serious aspect is given to it by the fact that the shipments of the domestic sizes decreased 174,896 tons, whereas the shipments of steam sizes increased 144,627 tons, all of which increase and more was recovered from the culm banks, and was not fresh-mined coal. In May, 1917, the shipments of domestic sizes amounted to 4,707,246 tons, or 68.04 per cent. of the total; last month the shipments of domestic sizes amounted to 4,532,350 tons, or 65.8 per cent. of the total. The shipments of steam sizes increased from 2,210,279 tons, or 31.96 per cent. of the total in May, 1917, to 2,354,906 tons, or 34.2 per cent. of the total in May of this year.

Compared with April of this year the shipments of domestic sizes increased 283,787 tons, or 6.7 per cent., while the shipments of steam sizes increased 235,096 tons, or 11.1. The decrease in the shipments of domestic coal, all of which is fresh-mined, as compared with last year, and the relatively smaller increase over April as compared with the increase in steam sizes, are due entirely to the inroads made upon the labor supply in the anthracite region, chiefly by the activities of munition plants and other war industries, several of which are located immediately in or adjacent to the mining districts. Some of these establishments are working on contracts of a "cost-plus" basis in which the cost of labor or of materials is of little importance, as profits on any costs are guaranteed, but their action in taking the labor from the mines is threatening the comfort and safety of the communities dependent upon the anthracite mines for their winter fuel.

Distributed by carrier companies the shipments during May were as follows:

	May, 1918	May, 1917	Coal Year, 1918	Coal Year, 1917
P. & R. Ry.	1,356,878	1,341,587	2,590,390	2,345,615
L. V. R.R.	1,328,464	1,275,513	2,503,491	2,264,386
C. R.R. of N. J.	566,974	735,758	1,216,595	1,362,259
D. L. & W. R.R.	1,037,603	1,090,649	2,045,621	1,984,107
D. & H. Co.	825,990	774,278	1,597,543	1,413,773
Penna. R.R.	493,380	498,052	941,754	931,366
Erie R.R.	761,436	786,995	1,456,622	1,451,604
N. Y. O. & W. Ry.	177,072	179,386	362,722	324,565
L. & N. E. R.R.	339,459	352,920	661,626	651,140
	6,887,256	7,035,138	13,376,364	12,728,815
	*00,000	*117,613	*120,735	*218,991
	6,887,256	6,917,525	13,255,629	12,509,824

* Deduction: Tonnage reported by both C. R.R. of N. J. and L. & N. E. R.R.

Safety, Direction and Warning Signal

By R. H. COULSON
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SYNOPSIS — *Most hoisting accidents arise either from a temporary lapse of attention on the part of the engine driver or from a mistaken position of the reverse gear. An apparatus is here described that is simple and positive in operation. Through a display of light signals it tends to lessen the accidents arising from either or both of the causes mentioned above.*

ANY IMPROVEMENT that can be devised for the purpose of preventing winding accidents will meet with the approval and commendation of the mining community. Undoubtedly the last 25 years have witnessed the introduction of great advances in detail in the operation of and accessories for hoisting engines. Nevertheless hoisting accidents continue to be reported, and many of them, no doubt, have occurred because the engineman in charge started with the reverse gear in the wrong position, due to momentary neglect, or having his attention directed elsewhere at the critical moment. The importance of safeguarding the hoist will be realized when it is remembered that in addition to it being employed for the purpose of raising the mineral, at least twice each day the lives of all the men employed underground depend upon the successful working of this equipment.

Successful Apparatus Was Designed

It was to the end that greater safety might be secured that the agent of the Collins Green Collieries, in Lancashire, some time ago suggested to the manager, Thomes D. Watson, that he might go into the matter of attaching some mechanically controlled arrangement to the hoisting engines so that the engineman in charge would know at any time whether his reversing gear, when starting or stopping, was in the right or wrong position. The agent outlined what was really required, and after working some time on the problem Mr. Watson devised a fairly successful apparatus. His agent further suggested that if he could make a warning signal sound an alarm at any predetermined point to warn the engineman that he should shut off steam it would be a still further improvement. This was fairly easy to accomplish on the existing arrangement, and the apparatus ultimately devised will tell the engineman in charge whether he is right or wrong with his reverse gear. The device is called the safety direction and warning signal and is intended for use in connection with hoisting, haulage and other machinery in which movement is to be reversed or stopped at regular intervals.

The apparatus gives a special signal, if needed in addition to any other indication, to warn the person in charge of the machinery that a certain predetermined point has been reached and also to show that the reversing gear is or is not in such a position that the intended depth or distance may be exceeded. The apparatus consists of three screens, rectangular, curved plane, or circular in form, with suitable gearing for altering the relative positions of two of them in relation to each other, and to the third, which is a fixed screen. Each of these screens is perforated in such a manner that at the predetermined point or points the light from a lamp placed behind becomes visible, either clear or through colored glasses, or other media, as may be desired, to the person in charge of the machinery. If desired a bell can be made to ring on approaching visibility. One of the movable screens is operated through suitable connection with the reverse gear; the other movable screen is moved through suitable connections by the drum or machinery shaft.

How the Lights Work

The latter movable screen is provided with red and green glass and is worked by a rack in mesh with a pinion fixed on an extension of the clock-face indicator spindle. Two lights are displayed, "red" and "green," but only one of these is visible at one time, the other being hidden by the screen actuated by the reversing gear. Near the end of the wind, at least two revolutions of the drum before the actual finish, a red light appears and remains visible until the reverse gear is put in the proper position for the next wind, when the red light disappears and the green light appears. This green light gradually disappears on starting the hoist and after the first two revolutions becomes invisible. After three-quarters of the wind has been completed (or any predetermined point reached) a small red light gradually appears, warning the engineman to shut off steam, when the small red light slowly disappears and when within two revolutions of the landing the larger red light appears and is full on at the completion of the wind. This operation is repeated as often as a wind takes place.

The glasses fixed on the movable screen actuated by the drum gear can be adjusted by a thumb screw arrangement to suit any position of the wind that is required and any reasonable number of glasses, if so desired, can be attached to suit any landing arrangement.

A horizontal depth indicator devised by Mr. Watson is placed under the center of the fixed screen. In this depth indicator the figures move and the pointer remains stationary, and on completion of the wind the end of the movable indicator comes to rest under the center of the red light.

Where great depths have to be shown, the indicator can not be easily seen. With this depth indicator the engineman has only to keep his eye fixed on the center of the depth indicator both for warning signal and depth indication.

This warning signal apparatus can be used for main rope and main and tail rope haulage (having fixed points to go to and from) whether worked by steam or electricity. It can be arranged to suit any number of landings, each being denoted by a different colored glass.

The secretary and agent to the Lancashire, Cheshire

and North Wales Enginemen's and Boilermen's Federation (Thomas Watson) who visited and examined a model of the apparatus, in a written communication says:

I have carefully thought over the merits of your invention, and I am fully satisfied it is a decided improvement on all appliances brought out up to the present for making overwinding less frequent. For instance, there are two distinct features associated with your invention not peculiar to others.

It gives visible warning to winders in a most clear, definite manner when engines are exceeding speed at various important points and similar warnings also in the event a winder attempts to start the wrong way; the whole construction being both simple and moderate in cost. Certainly I can honestly say and it can be verified by those having an extensive knowledge of overwinding accidents, that at least 50 per cent. take place through starting the wrong way, which without doubt your contrivance will reduce to a minimum.

If by a stud arrangement a bell is made to ring when the red light was approaching visibility, introducing sound to remind sight, bringing another special sense into operation, it would perhaps add to its utility.

The new device has also been examined by William Forshaw, assistant secretary and agent to the Lancashire, Cheshire and North Wales Engineers' and Boilermen's Federation, and the following is an excerpt from his letter:

From a winding engineman's point of view it (this apparatus) appears to have no objectionable features, while it has distinct advantages. It will, I consider, be helpful to the engineman and will conduce to the safety of life and property by tending to reduce overwinding accidents due to starting the engines in the wrong direction.

In addition to the foregoing and others the apparatus has been examined by the enginemen at the colliery where Mr. Watson is the manager, and all express their appreciation of this apparatus and its simplicity. One person who examined the device has no hesitation in saying it was the "Engineman's Friend."

Referring to the illustrations of the safety, direction and warning signal, Fig. 1 shows the apparatus ready for descent, while Fig. 2 shows it ready for ascent. Fig. 3 shows the rack screen which carries the colored glasses. Fig. 4 shows the movable screen in relation to

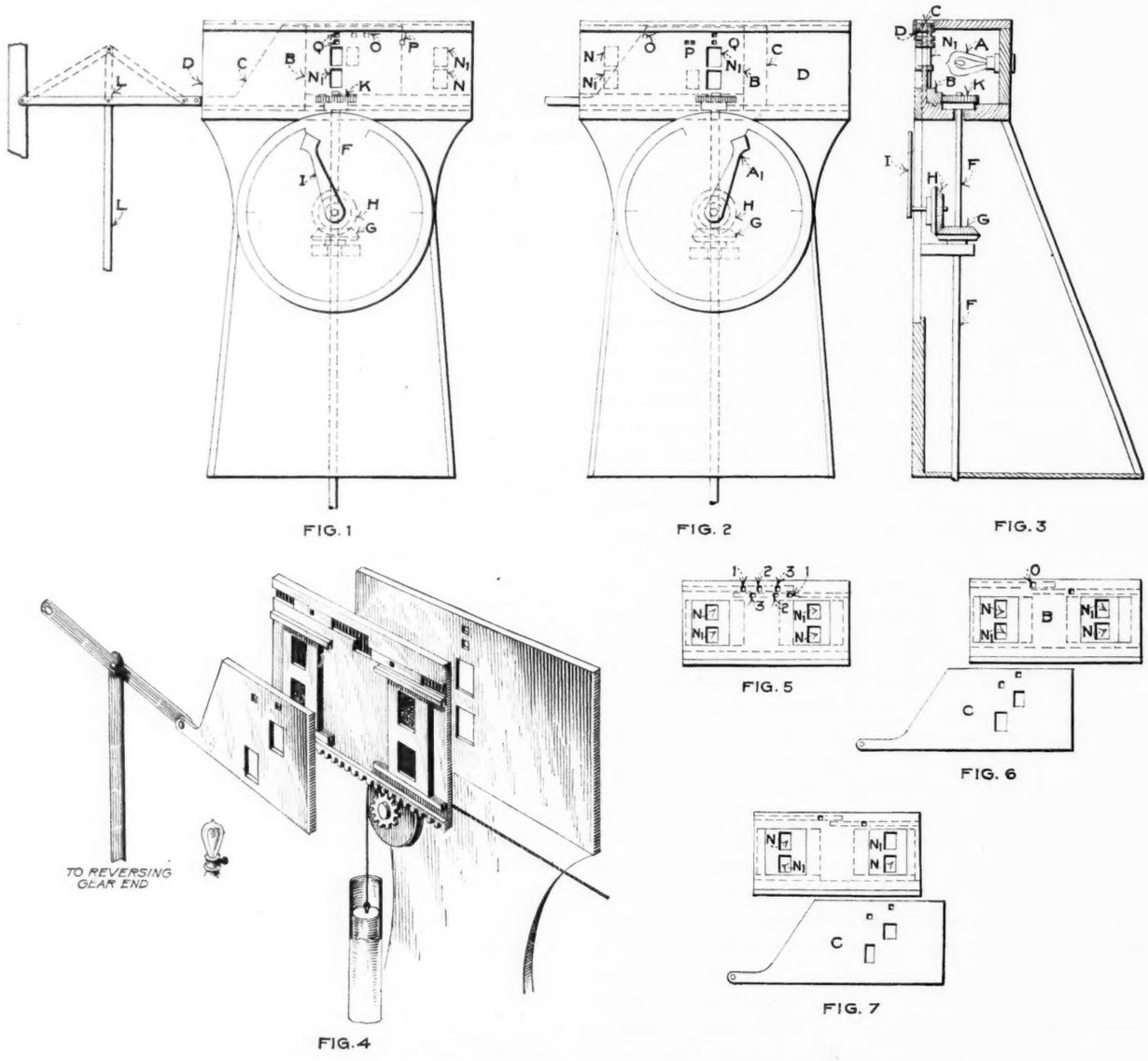


FIG. 1 FIG. 2 FIG. 3

FIG. 4 FIG. 5 FIG. 6 FIG. 7

FIGS. 1 TO 7. DETAILS AND VARIOUS VIEWS OF THE APPARATUS

the reversing gear position. Fig. 5 shows the rack screen with glasses separately. Figs. 6 and 7 show the movable screen in relation to the reversing gear positions. Fig. 3 is a section of the apparatus as shown in Fig. 2. Fig. 5 shows a rack screen for haulage underground with a starting and stopping point with three landings of shunts between them, each shunt being denoted by different colored glasses, and Fig. 4 shows the apparatus fixed to a cord indicator ready for an ascent.

Examining the accompanying figures it will be seen that the device consists of the lamp *A*, the screen *B*, moved by means of the spur gearing *K* meshing with a rack carrying a screen with glasses, and as the cage moves up or down the pointer *I* is actuated by the shaft *F*, through the bevel gears *G* and *H*. *C* is the screen operated by the toggle lever *L* from the reversing gear. *D* is the front screen which is fixed. This, as shown in Figs. 1 and 2, is of such length as to allow the other two movable screens to work behind it. *B* is the rack screen, shown clearly in Figs. 3 and 4. It has guides whereby the openings filled with colored glass can be regulated and adjusted by hand when required. The colored glasses *N and* N_1 are respectively "red" and "green," and appear when the perforations in the screens coincide.

Small Lights Show When Power Can Be Shut Off

The little glasses *P* and *O*, colored red, alternately appear opposite their respective openings and show when the cage has reached such a point that the power can be shut off. This forms a warning signal.

The apparatus is shown ready for descent in Fig. 1. The screen *B*, as shown, has the bottom perforations opposite, and the green glass N_1 shining through shows "right away," the reversing gear being in proper position for descent. On the wind being begun the gearing gradually moves the rack *B* to the left, the green gradually disappearing at the second revolution of the machine, and at three-quarter wind (or any predetermined point) the small red light *P* gradually appears, and then gradually disappears, warning the engineman that a cage is coming up to the top and to shut off power. At the second revolution from the top the red light *N* gradually appears, and when *N* is full on the wind is complete. The rope cage is now at the top. By changing the reverse gear the screen is moved to the position shown in Fig. 6, and the apparatus is ready for another wind, as shown in Fig. 2.

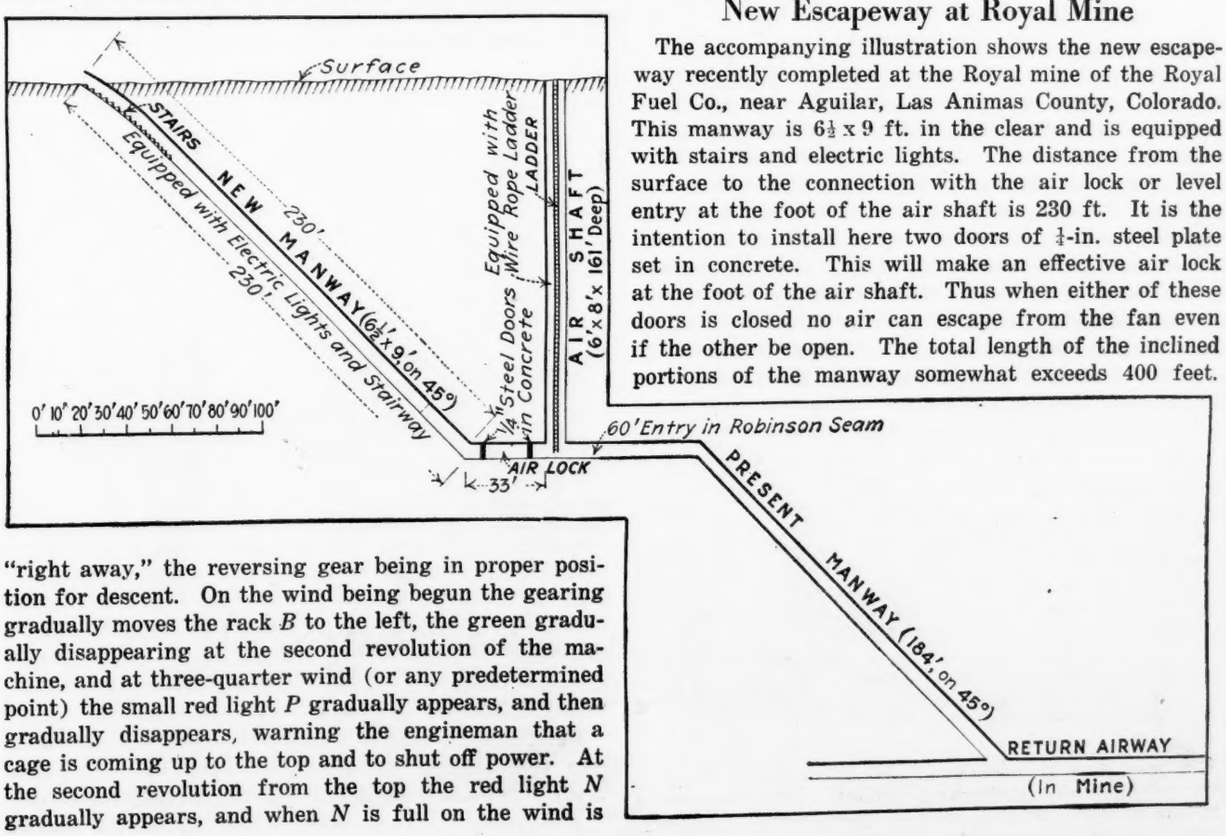
Precisely the same operation takes place in the reverse direction, but instead of the small red light *P* gradually appearing the small light *O* gradually appears, warning that the other cage is coming to the top and it is time to shut off power. If so desired electric contacts at *O* and *P* can be fixed so that when these lights appear sound can be made to remind sight.

The screen *D* can be made of sheet iron $\frac{1}{8}$ in. thick; screen *C* of sheet iron $\frac{1}{16}$ in. thick; screen *B* of the same material $\frac{1}{8}$ in. thick, with shoes for glasses, rack and spur wheel of cast metal. The lamp chamber is preferably enameled white so as to give better results. As to method of lighting, any lamp is suitable for the apparatus.

The following claims of advantage are made for this device: The small red light gradually appearing and disappearing warns the engineman that it is time to shut off steam. The larger red light gradually appearing warns the engineman of nearing completion of wind, and when full on tells him that the hoist is finished. The larger red light warns the engine driver of the danger of restarting his machine until movement of reversing gear obscures the red light and shows the green light. The green light informs the hoistman that the reversing gear is correct for restarting the machine when the signal is given. The whole arrangement is simple, compact, inexpensive and has few parts to get out of order. The inventor acknowledges his indebtedness to his fellow officials and workmen for criticisms and suggestions.

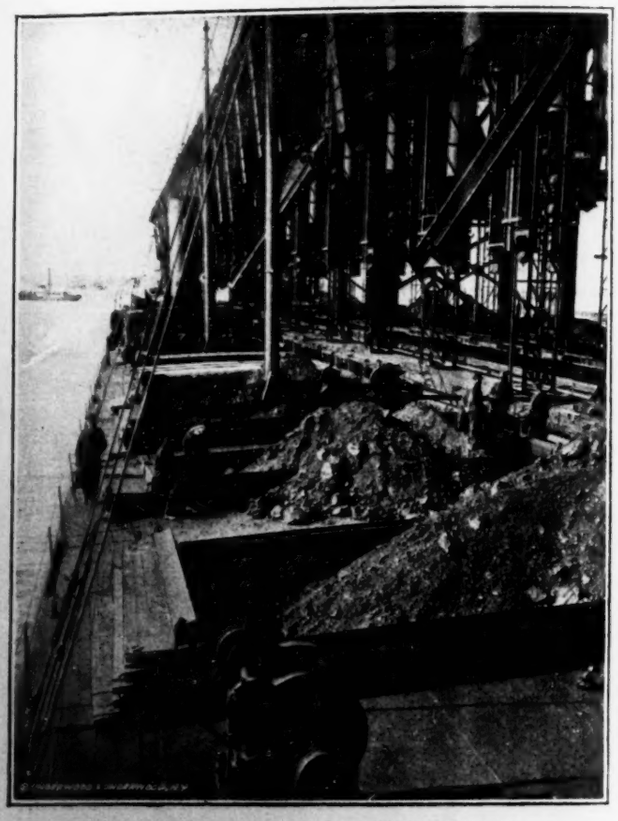
New Escapeway at Royal Mine

The accompanying illustration shows the new escapeway recently completed at the Royal mine of the Royal Fuel Co., near Aguilar, Las Animas County, Colorado. This manway is 6½ x 9 ft. in the clear and is equipped with stairs and electric lights. The distance from the surface to the connection with the air lock or level entry at the foot of the air shaft is 230 ft. It is the intention to install here two doors of ¼-in. steel plate set in concrete. This will make an effective air lock at the foot of the air shaft. Thus when either of these doors is closed no air can escape from the fan even if the other be open. The total length of the inclined portions of the manway somewhat exceeds 400 feet.

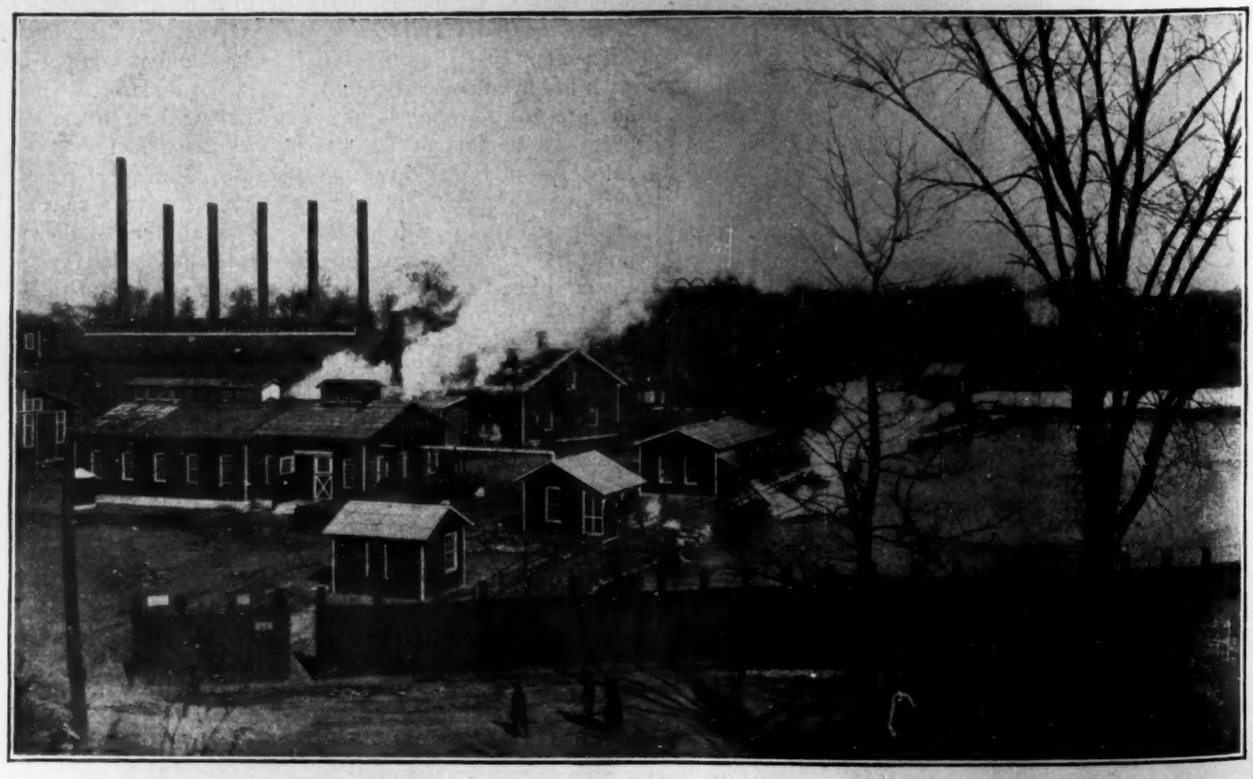


SNAPSHOTS IN COAL MINING

MINERS AT WORK IN A THICK SEAM OF ANTHRACITE



COAL-LOADING PIER AT NORFOLK, VA.

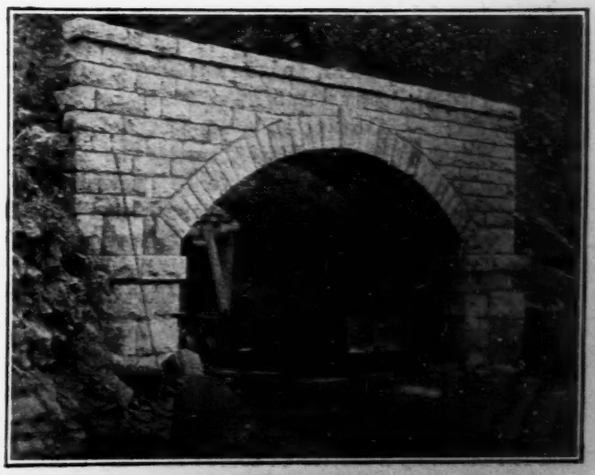


GENERAL VIEW OF DORRANCE COLLIERY, LEHIGH VALLEY COAL CO., WILKES-BARRE, PENN.

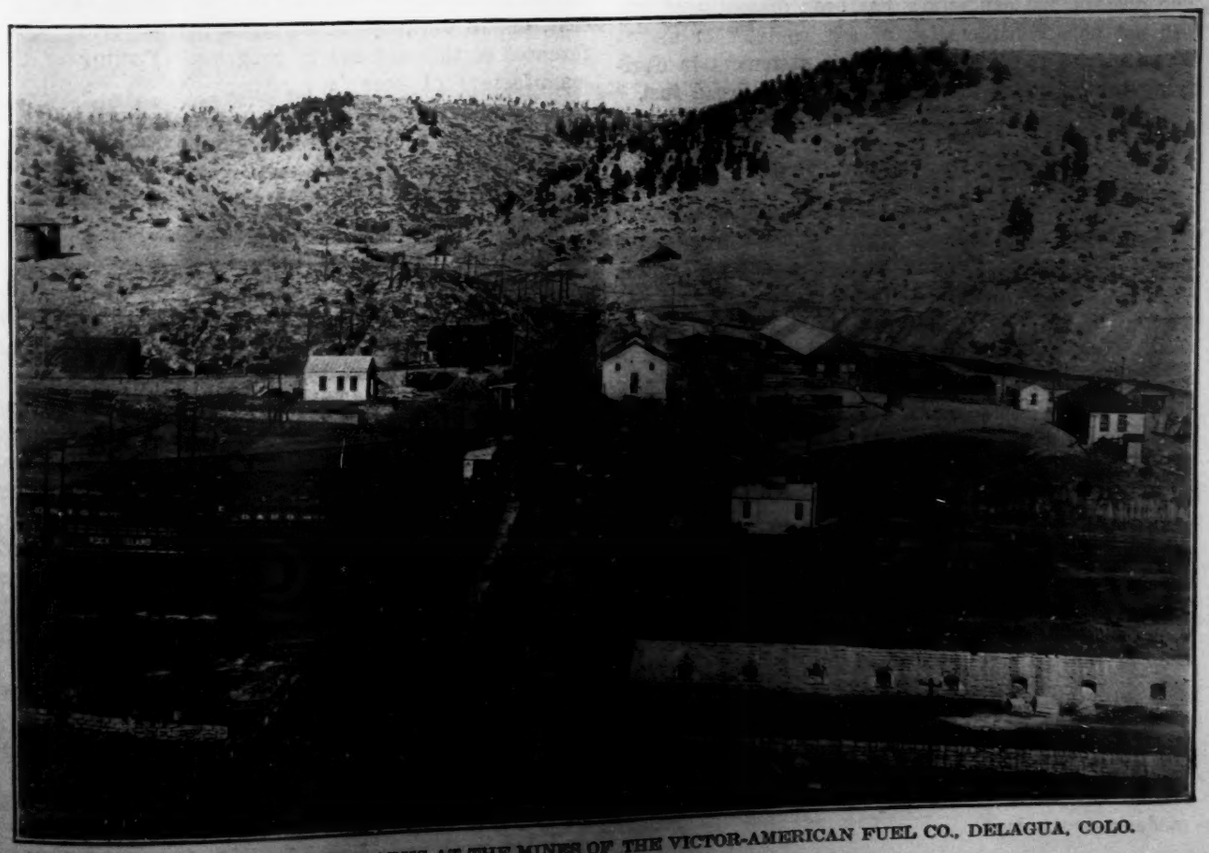
NO. 3 TIPPLE OF NEW RIVER COLLIERIES CO., ECCLES, W. VA.

READERS are invited to submit photographs suitable for reproduction in the pages of COAL AGE. Views of surface plants, scenes underground and snapshots of coal-cutting and conveying machinery are especially desirable. Good photographs will be paid for liberally, and whenever requested will be returned after they have been used. If you are proud of your company buildings, surroundings and equipment, send in some photographs so that COAL AGE readers may see why.

GERMAN PRISONERS AT WORK IN ENGLISH COAL YARDS



MAIN ENTRANCE OF J. W. DWYER COAL MINE IN RALEIGH COUNTY, WEST VIRGINIA



PARTIAL VIEW OF TIPPLE AND WORKS AT THE MINES OF THE VICTOR-AMERICAN FUEL CO., DELAGUA, COLO.

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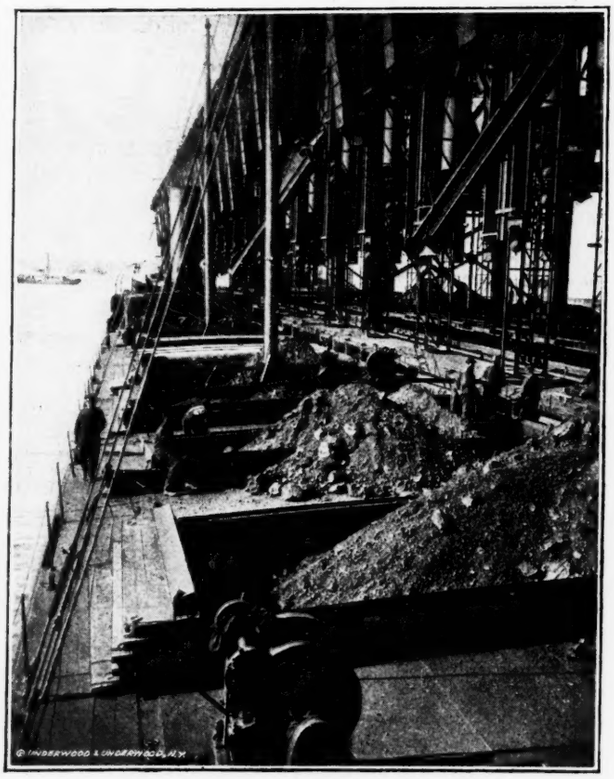

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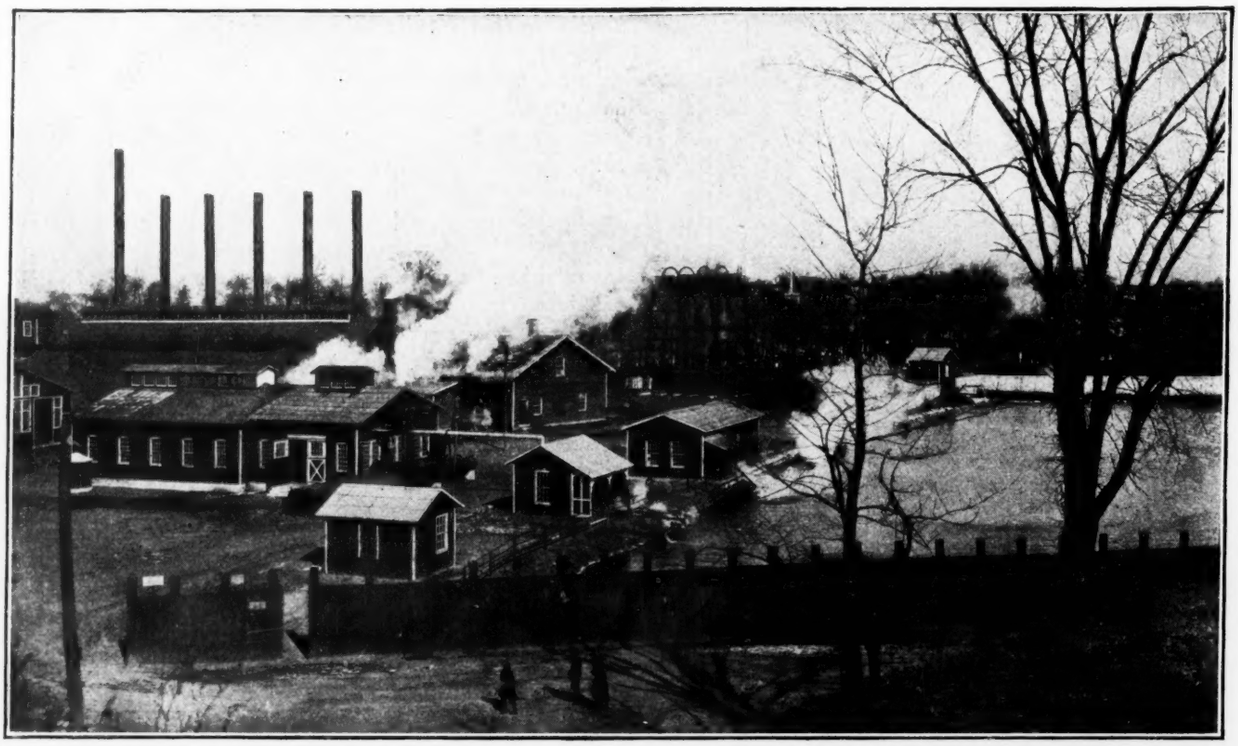

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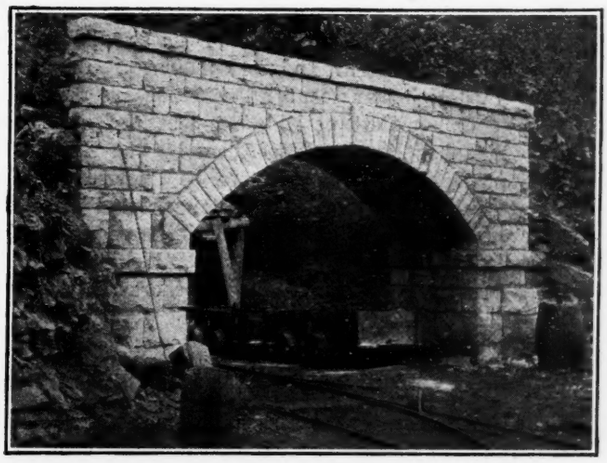

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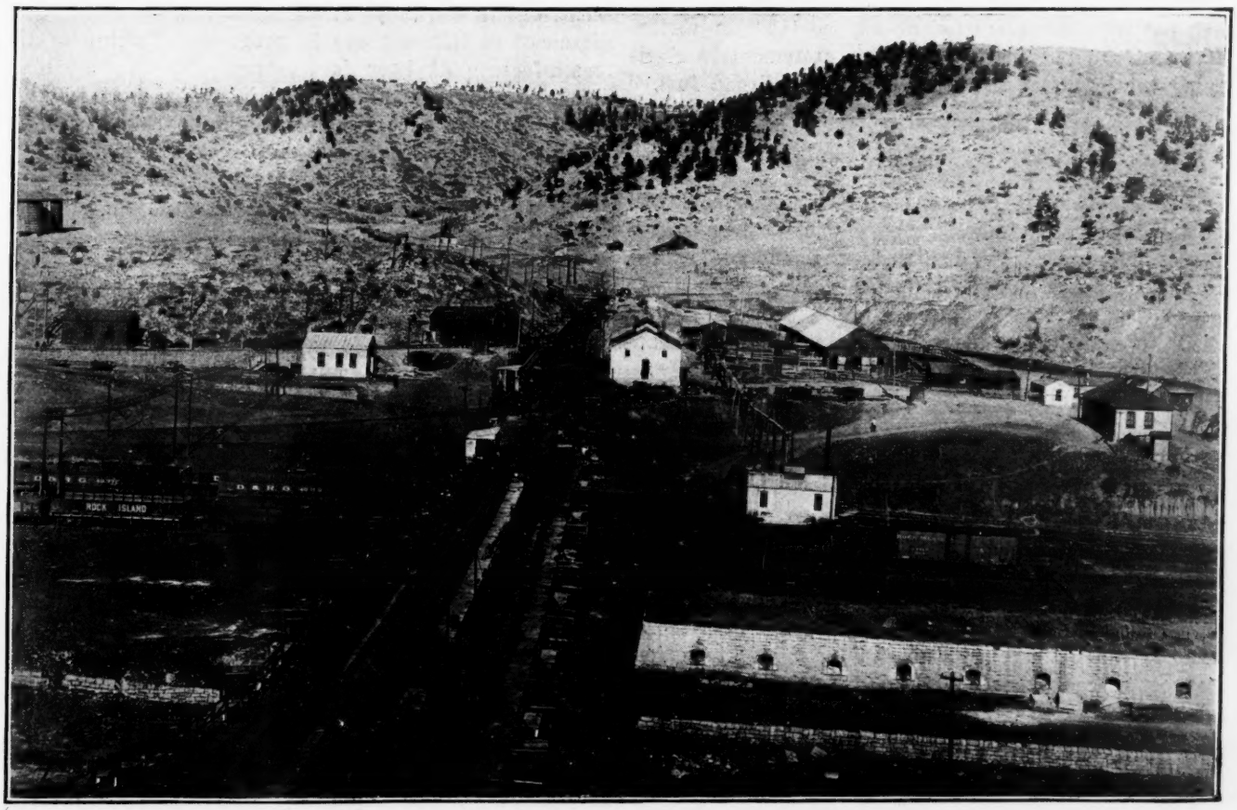


PARTIAL VIEW OF TIPPLE AND WORKS AT THE MINES OF THE VICTOR-AMERICAN FUEL CO., DELAGUA, COLO.

To Classify Industrial Users of Coal

All industrial concerns using 500 tons or more of coal annually are to be classified on the so-called preference list of the War Industries Board. In order that no hardships may result all concerns are urged to return at the earliest possible moment the questionnaire which has been sent to them by the Fuel Administration. Dealers are not to be allowed to add increased freight charges to coal transported prior to the increase in rate. The Fuel Administration expects to penalize severely any dealer who adds the freight rate increase to coal on which this increase was not actually paid.

Explains Order Regarding Railroad Fuel

"The Government prices for coal are maximum prices, and it follows as a matter of course that any consumer including the railroads may purchase for less than the Government price provided it is mutually agreeable. The preferential car supply has been discontinued and will not be a consideration of any contract or understanding." Dr. Garfield made this statement in clarifying the intent of the order covering railroad fuel.

Large Tonnage to Northwest and Canada

A total of 28,000,000 tons of bituminous coal will be handled through Lake Erie ports to the Northwestern States and to Canada, it has been announced at the Fuel Administration. Of the total, 24,000,000 tons will go to the Northwestern States. Every effort will be made to expedite the movement of the Northwest supply so that early diversion of coal may be made to Ohio and Michigan. This will obviate the difficulties of last year when the supplies for the last-mentioned states did not become available until late in the fall.

Shipping Board Proud of "Tuckahoe"

The Shipping Board is proud of the performance of the "Tuckahoe," one of its new colliers. The ship was built in 37 days. During the first month that it was in service, ending June 21, it took four cargoes of coal from Norfolk and Baltimore to Boston. The four cargoes aggregated 19,000 tons. Two round trips a month have been the average performances of steam vessels engaged in the New England coal-carrying trade. One of the round trips of the "Tuckahoe" was made in seven days.

Tidewater Coal Must Be Dumped Immediately

Coal for tidewater must be dumped immediately, the Fuel Administration has ordered. Some shippers have delayed dumping in order to hold the coal for bunkering, thereby allowing them to take advantage of the higher price.

Priority in Labor Supply

Priority in labor supply soon is to take definite form. Labor probably will be supplied in the following order: Shipbuilding activities; operation of railroads; production of coal, coke, oil and essential minerals; munition manufacture and other supplies for Army and Navy use. This classification will be extended at length, but some time probably will be required.

To Restrict Coal for Use of Breweries

Coal for breweries probably will be reduced to 50 per cent. of the consumption during a normal year. Conferences to this end are in progress. Pooling of the manufacture of beer is meeting with favor. It is believed that several hundred breweries located at a distance from a coal supply could be closed, thereby confining the making of beer to plants which could be operated more economically so far as fuel is concerned.

Weekly Production Statistics

Previous performance in the entire history of coal mining in the United States was exceeded again during the week ended June 15, when production reached 12,571,000 short tons. This compares with a production of 11,434,000 short tons in the corresponding week of last year, which in itself was a record at that time. The daily average production for the week ended June 15 was 2,095,000 net tons. This is regarded as a truly wonderful accomplishment when it is considered that serious car shortage still exists; that thousands of the most productive operatives have been taken by the draft and that labor conditions generally are in a demoralized state.

Anthracite production for the week under review showed an increase of 3 per cent. Shipments aggregated 41,960 cars. This is the best showing that has been made in many weeks.

Beehive coke production for the week ended June 15 was 658,000 tons. This is an increase of 3.5 per cent. over the week preceding. Byproduct coke production

continues to hit its stride around 89 per cent. of full-time capacity. Production for the week under review was 484,290 tons. Extensive repairs to plants continue as the principal limiting factor.

The percentage of full-time output during the week ended June 8 was the highest ever recorded. During that week, the mines of the country were operated at 82.3 per cent. of their full-time capacity.

Telegraphic advices to the Fuel Administration covering output during the week ended June 22 show a slight decrease. It is believed that the remarkable performance of the week ended June 15 will be the peak of production for some weeks to come.

The figures referred to in the foregoing are estimates made by C. E. Lesher, the geologist in charge of coal statistics for the United States Geological Survey.

Rates Equalized on Bunker and Cargo Coal

Railroad rates equalizing charges on bunker and cargo coal to all ports have been issued by the Interstate Commerce Commission. The commission sees no justification during the present emergency for lower rates on bunker coal than on cargo coal originating at the same point and delivered to the same vessel.

Coal Prices Changed in Texas

Prices for bituminous coal and lignite mined in Texas are as follows: All bituminous coal, except that produced in Erath, Palo Pinto and Young Counties, run-of-mine, $4.25; prepared sizes, $5.05; slack or screenings, $2.25.

Erath, Palo Pinto and Young Counties, run-of-mine, $3.40; prepared sizes, $4.20; slack or screenings, $2.25.

All lignite, run-of-mine, $1.55; prepared sizes, $1.75; slack or screenings, $1.

The regular allowance for wage increase may be added. In the case of bituminous operations, summer discounts must be made.

Rigid Inspection Leads to Cleaner Coal

Out of 621 inspections made at the instance of the Fuel Administration during the week ending June 22, 390 showed that coal was being prepared improperly. No case was sufficiently flagrant to cause the closing of the mine. The Fuel Administration finds, however, that "the rigid inspection is having constructive results in securing cleaner coal and thus conserving transportation and time."

To Discontinue Preferential Car Supply

Discontinuance of a preferential car supply for railroad fuel, effective June 24, has been ordered on the Pennsylvania lines and on the Baltimore & Ohio. The principal is to be extended to other roads as rapidly as possible, in accordance with a recent agreement.

New Coke Prices Announced

Additional coke prices have been announced as follows: Beehive ovens, in Cumberland County, Tennessee —Blast furnace, $7.25; 72-hour selected foundry, $8.25. Beehive ovens at Ansted, West Virginia—Blast furnace, $7; 72-hour selected foundry, $8.

To Bring Mexican Labor Into United States

Immigration regulations have been suspended so that Mexican labor may be contracted and brought into the United States for specified occupations, which includes lignite coal mining.

Fuel Oil Users Urged to Buy Early

The Oil Division of the Fuel Administration is urging plants which operate on fuel oil to fill their available storage now and, if possible, to create a reserve which could be used next winter. Only in this way will plants be protected from emergencies that may arise next winter. The heaviest demands will be made on petroleum products and the greatest difficults are likely to be experienced as regards railroad congestion.

At the present time, it is pointed out, the oil industry is getting exceptionally good service out of the oil transportation equipment. Tank cars are moving as high as 300 miles a day now, as compared with the general average of under 30 miles per day last winter. This means that an immense amount of fuel oil can be delivered now, as compared with what can be handled under the handicaps of next winter's weather conditions.

New Prices for Anthracite at Lake Docks

To provide for the increase in freight rates and the cost of handling at the docks, new prices on anthracite at Lake Superior and Lake Michigan docks have been ordered as follows: Broken, $10.20; egg, $10.10; stove, $10.35; nut, $10.45; pea, $8.80. The prices are subject to the summer reduction of 30 cents.

Brief Washington Notes

Martin Gerry has been appointed fuel administrator for Montana. Mr. Gerry is a civil engineer and resides at Helena.

T. B. Davis, president of the Island Creek Coal Co., has been made chairman of the National Coal Association's committee on mine supplies and priorities.

Cement plants have been assured of a sufficient fuel supply to handle all production needed for war requirements and for other demands of exceptional importance.

W. W. Miller has been appointed fuel administrator for the State of Washington. He succeeds David Whitcomb, whose appointment as executive secretary to Dr. Garfield is announced.

For violating the regulation with regard to bunker coal, the Penn Fuel Co., of New York, has been deprived of its license by the Fuel Administration. Further action is to be taken by the Department of Justice.

Purchase of 125,000 acres of coal land by the Government and the purchase of the Virginian Ry. are provided in a bill introduced by Senator Lewis of Illinois. The field would be operated by the Government with the idea of supplying the coal needs for the Navy and the Army.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

There is a growing sentiment in favor of a distinction being made between essential and less essential industries in the operation of the draft. It is stated by the National Coal Association, which has just completed a survey of the situation, that by Sept. 1, when the second draft calls will be completed, more than 2,000,000 men will have been drawn from the ranks of labor in the coal-producing states for service in the United States Army. It is becoming increasingly hard for those who are carrying the industrial burden of the war to do so in the face of the depletion of the working forces. Meanwhile the less essential industries are continuing to operate under as many privileges as to draft and labor as the essential industries, under few or no restrictions as to production and under absolutely no restrictions as regards price of product.

Anthracite operators unable to meet the requirements of the coal market by getting new men, by hiring women or boys below the age limit, or by a suspension of the Gallagher bill, are trying to increase their tonnage by decreasing absenteeism and inducing miners to put in a full day.

The Susquehanna Collieries Co. in the Mt. Carmel-Shamokin district called together 20 to 50 of its best miners in every colliery and presented the coal situation to them in all its perplexities. The Susquehanna officials requested the men to work a full eight-hour day. The company's officers declared that they wished to see the miners making big wages and would do all they could to aid them in that endeavor.

PROMISE TO WORK STEADILY AND WITH ENERGY

Nearly all the men pledged themselves to work a full eight-hour day in the cutting of coal. They were assured that the company would not fail to supply cars as fast as they were needed. The conference also took up the question of the slow-work days following every pay-day. The company expects shortly to announce a system of bonuses to be paid to the men who do most toward increasing coal production.

Pledge cards, which earnest mine workers started ten days ago to circulate among their fellows, are already showing their value. At every mine where they have been used, it is noted that the average of absenteeism has appreciably decreased, with the result that the men, as a body, are working much more nearly 100 per cent. time. There is still a wide gap, however, between the nominal 48 hours per week per man and the actual time made.

Statistics go to show that the war calls upon the anthracite army of workers have had the effect of bringing down the average effectiveness of the whole body of labor engaged in the anthracite industry. This is partly because a large number of men, new to the work, have come in, partly because there is an abnormally large turnover in the labor force, but chiefly owing to the fact that the largest drain has been from men between 20 and 31 years who, in the natural order of things, are more capable than others of the steady performance of exacting toil.

Labor statistics for April have just become available today. They show that for that month the anthracite workers numbered 153,092. That is a decrease of 2888 men from the number employed the month before. The loss included 644 certificate-holding miners, men whose places, under the law, it is impossible to fill in less than two years. The average output of anthracite by a single miner is 165 to 170 tons per month. Of course, the miner only dislodges that much coal; he has a laborer to load it; motormen and drivers haul it; a host of men keep the mine in order and another host prepare the coal. But all these stand idle if the essential miner does not do his bit. The loss to the industry of 644 miners means therefore a loss of about 1¼ million tons per year and that at a time when the demand greatly exceeds the supply.

Since April the draft has taken several hundred mine workers, and other causes have drawn away from the anthracite industry an even larger number of men, so that the total available force in the anthracite mine workers' army today, as closely estimated, does not exceed 145,000, which compares with the 177,000 mine workers employed in the anthracite region before the war. The only way now possible to keep production up to anywhere near a maximum point is by better average working time and by increased accomplishment of the mine workers in working hours, greatly aided as these are, by the developments in machinery and mining equipment of recent years.

	Men Employed, March, 1918	Men Employed, April, 1918	Increase or Decrease
Miners	42,830	42,186	D. 644
Miner's laborers	21,990	20,768	D. 1,222
Company men (inside)	42,763	42,143	D. 620
Company men (outside)	42,949	42,515	D. 434
All other employees at collieries.	5,448	5,480	I. 32
	155,980	153,092	D. 2,888

The attention of the Secretary of War, N. D. Baker, has been called to the recruiting going on among mine workers in the Shamokin district. He promised to have it stopped. The draft will take enough men without adding to the depletion by enlistment. Provost Marshal Crowder is said to have taken the position that neither miners nor other mine workers shall be exempted or placed in the deferred class. The tonnage last month despite all the efforts of loyal mine workers and operators fell to a level 30,000 tons lower than in the same month last year, the year of the coal famine.

Reports from the Lehigh field show that the mine workers there are somewhat generally opposed to the suggested extension of the working day to nine hours, claiming that longer hours would not cause the production of any more coal. The strike at the Coal Brook colliery of the Delaware & Hudson Co., recorded at length in our issue of June 22, came to an end June 20. An order of John P. White, former president of the United Mine Workers and now a member of the United States Fuel Administration, dated June 15, was, at first, disregarded by the mine workers. A meeting was held on the evening of June 19, the men being addressed by the officers of the local and by W. H. Connell, of Scranton, the president of the Anthracite Conciliation Board. The latter pledged his word that the Board would make a careful inquiry and reach a decision as soon as possible. The vote showed 248 in favor of resumption and 114 in favor of continuing the strike. The dispute is about the placing of laborers in rooms of their own, and the alleged non-payment of the scheduled rate for the regular mining and for the removal of "shelf-rock."

On June 17 Charles P. Neil, the umpire of the conciliation board, decided in favor of the men at the Clinton colliery of the Delaware & Hudson Co., to which reference has just been made. He declared in his decision that they were entitled to an increase of 7 per cent. instead of the 3 per cent. that had been paid them under the company's interpretation of the last contract. The footmen at the Packer No. 3 colliery of the Lehigh Valley Coal Co., near Shenandoah, also received a favorable verdict, men receiving 27c. per hour being awarded 32c. by the umpire.

The principal recent feature in central Pennsylvania has been the propaganda in behalf of increased production. Successful meetings have been held at Barnesboro, Johnstown, Indiana, Kittanning, Dubois, Punxsutawney and Philipsburg, about 45,000 persons being present. The producers and mine workers of the district declare that production can be kept up to the level provided by railroad trans-

portation facilities without any necessity for lengthening the hours of labor or resorting to the conscription of working men. Pledge cards, the signers of which agree to increase their production to the limit of their power, have been freely circulated and 40,000 of them have been signed.

The foreigners in Ohio bitterly resent the action of the union in refusing work to all unnaturalized aliens and are displaying revolvers in support of their demand that they be not removed from their union affiliation. At Shadyside Belmont County, Ohio, near Bellaire, it is said that 16 revolvers were shown during a meeting of the local where a motion further supporting the expulsion of aliens was presented. At the Big Run mine of the Rail and River Coal Co. 40 or 50 Austrians and Russians hooted a man who proposed the exclusion of foreigners. At Pulteney two men who opposed the expelling of aliens presented revolvers in defense of their contention.

In the Fairmont region of West Virginia the work of unionizing continues. A single evening saw 500 members enter the union at the largest mine in West Virginia. This mine belongs to the New England Fuel and Transportation Co. The same night 245 members joined the union at Baxter, where the Monongahela Valley Traction Co. has a mine. Both these plants are on the Big-Paw-Paw Creek in Marion County. At a point remote from these, namely Masontown, Preston County, a village on Decker Creek above Morgantown, much union activity is being exhibited. Between 700 and 800 new members are joining the union.

The union in the Georges Creek region of Maryland loses its president, William Diamond, the aforetime international statistician. He had intended to go back to work in Michigan as a mine worker, but he will ply that occupation near Altoona, Penn., because of the difficulty in getting his household goods transported. Francis J. Drum has succeeded him as president of the district, No. 16, and will reside at Cumberland, the terminus of the one and only railroad which serves the Georges Creek coal mines.

"Mine the Tons That Beat the Huns"

The crowd of mine workers shown assembled in the streets of Indiana, Penn., in the illustration herewith, probably did not put their thoughts into the slogan "Mine the Tons That Make the Guns To Beat the Huns," but the idea was there and animated the meeting. It was one of a series of gatherings held throughout central Pennsylvania under the auspices of the Central Pennsylvania Coal Producers Association, for the purpose of increasing the production of coal.

John P. White, of the United States Fuel Administration, former International President of the United Mine Workers of America, was the leading speaker. Capt. Frank Schwab represented the British Army and Lieut. Robert J. Bagnes the army of heroic France. Joseph Poggiani, also of the Central Pennsylvania Coal Producers Association, spoke to his fellow countrymen in their own language. Gazy Carol addressed the Slavs in their tongue, and John Brophy, of Clearfield, president of District No. 2, pleaded with all who could understand English for a big output of gun-making coal, without which no success against the enemy of our people could possibly be secured. It is estimated that 6000 men attended the meeting.

It would be impossible to record all the rallies held in central Pennsylvania. A notable one was held the day before at Johnstown in the Cambria Theater, the presiding officer being the Hon. Francis J. O'Connor. Some of the speakers have been referred to already as being present also at Indiana. They were John P. White, Captain Schwab, Lieutenant Bagnes and Joseph Poggiani. To these were added Lieutenant Clark of the United States Army, who was in charge of an alien squad of 17 men of different nationalities, Charles O'Neil, Secretary of the Central Pennsylvania Coal Operators Association, and Father John Martvon, of Johnstown. At the back of the program was printed a pledge which every man was asked to sign. Every mine with 100 per cent. of signatures will get a National Service Flag. The pledge runs:

"I pledge allegiance to my flag and to the republic for which it stands—one nation indivisible, with liberty and justice for all. And I do sincerely believe in the proposition that coal will win the war, and therefore promise to do everything in my power to improve and increase the production of coal by every means at my command, doing so in firm belief that in this way I will contribute to the success of my country in her struggle with the Imperial Government of Germany."

The words "I pledge allegiance to my flag" are now usually written, "I pledge allegiance to the United States flag," and with this change all ambiguity is removed.

INDIANA, PENN., MINE WORKERS PROMISE THAT THEIR WORK SHALL ATTEST THEIR PATRIOTISM

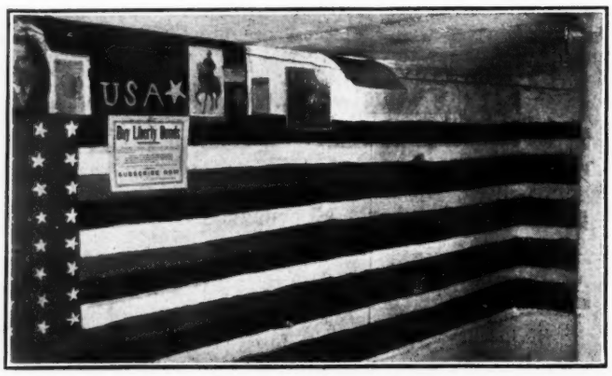
Means for Increasing Hard Coal Output

"Anti-slacker" committees are to be formed at every colliery, and men who do not work steadily, or who do not aim continually to maintain a maximum tonnage, will hear from their fellows. Perhaps longer hours will be worked. The union leaders have been asked to sound the men on that proposition. No one can fail to regret the necessity for this, but after all it is by no means as grievous and unkindly a necessity as that which already takes the best young men of our nation to the field of slaughter.

And now comes a novel proposal: to reduce the consumption of coal at the mines, replacing coal, even there, by the use of wood. The Kingston Coal Co. purposes to saw wood at a mill just erected at its No. 4 colliery, at Edwardsville. To this mill waste wood of every sort will be brought. Around every mine is a lot of old timber—crosspieces, posts, ties and discarded building material. The Edwardsville mill of the Kingston Coal Co. will get busy on this waste lumber. It will be sold at cost, and it is hoped that the housewives will use it to the exclusion of wood, at least during the summer and early fall seasons, when fuel is used solely for cooking and water heating. C. F. Huber, the general manager of the Lehigh & Wilkes-Barre Coal Co., believes that a material saving of anthracite will result from the wood-burning plan, if the mine workers take to the idea patriotically.

A Patriotic Straw-Boss

The ilustration herewith shows a view in the stable of the Claridge mine of the Westmoreland Coal Co., Claridge, Penn. The stableman, Robert Lisinger, painted on the brick



PAINTS BIG FLAG IN UNDERGROUND FEED ROOM

wall of the feedroom the large United States flag shown, which teaches its silent lesson of patriotism to the drivers and others having occasion to enter the stable. This stable is entirely below ground. The picture was taken by the mine foreman, Robert Ridley.

Hecla Urges Patriotism and Production

The Hecla Coal and Coke Co. in an effort to secure the coöperation of all its employees in an 100 per cent. output during the war, has inserted the following notice in all its pay envelopes, in English, Italian, Slovak, Hungarian and Russian.

"To the Employees of the Hecla Coal and Coke Co.: Over 1,000,000 Americans, including many of your friends and relatives, have given up good jobs and are now fighting in France to keep the Germans out of America. They cannot win the war without guns, ships and other supplies, in the manufacture of which coal and coke are used.

"It is your duty to support these men and to protect yourselves and your families by working every day and by producing every ton of coal and coke that you possibly can. The soldiers are working day and night at very small pay. We are asking you to work six days a week at the highest rates of pay ever earned by coal and coke workers.

"Don't be a slacker! Do your share! Don't have your friends come back crippled and blame you for failing to support them. Don't lay off and drink while they are dying for you and your families. Each day you loaf adds one day to the length of the war."

The same notice, enlarged, has also been posted on the bulletin boards at all the mines and coke plants of the company. In addition, every employee is given an opportunity to sign the "Industrial Soldier Pledge" card shown above, and each signer is given an industrial soldier's button.

HECLA COAL & COKE CO.

.....PLANT

INDUSTRIAL SOLDIER PLEDGE

Realizing that the greatest possible amount of Coal and Coke must be produced to win the war, I hereby promise to work six days a week and do my best to increase the production of Coal and Coke.

PLEDGE TO FIGHT THE WAR IN THE MINE TRENCH

According to General Manager W. L. Affelder, the men are responding to an even greater extent than had been anticipated.

The enlisted or conscripted soldier works whenever there is work to do and at whatever work needs to be done. The industrial soldier whose work is in the mine works whenever there are cars and does his best to put out a record tonnage in whatever capacity he is employed. Both work for their country rather than for pay. The industrial soldier goes on working till he has made all he needs for the family, and then starts in afresh to secure the money to buy Liberty Bonds and War Savings Stamps, that he may thereby support the Government.

Labor Difficulties in Upper Lehigh Region

A correspondent, writing from the upper Lehigh region, finds the draft is affecting mostly the day hands, who, in general, are younger than the miners:

"The war has caused a most serious shortage of labor, not among the actual miners at the face, but in the men engaged in haulage and preparation. The young men who have been drafted and the fellows who are enlisting in greater numbers each day are skilled breaker hands, drivers, steam engineers and all around colliery mechanics. The men who mine coal are, in greater part, above the present draft age and, in a large percentage, are men of foreign birth. They have in many cases a boy or more already in the army. One miner in Beaver Brook has sent three boys away already and another is in the next call.

"The Beaver Brook colliery has been hard hit by the war. From the little town of about 500 people 45 employees have gone into the army. Many of the employees at the mines, knowing that there is a great shortage in labor, are taking liberties and neglecting their work. Such a nonperformance of their duties a year ago would have caused their dismissal. The young fellows below the draft age are out for the biggest possible rewards and go from one colliery to another looking for the biggest pay. In Hazleton the mines are competing with a big munition plant which has the backing of the Chamber of Commerce in its drive for employees, as if that industry was more important to the city than the mines by which the major portion of its people have for years been supported."

The Lehigh Valley Coal Co. will use school teachers in its offices during the summer vacation of the schools.

EDITORIALS

Congress Should Eliminate Long Tons

ONE of the primary Government conditions our forefathers required was that of uniform standards of weights and measures. They considered these so important that they provided for them in the Constitution. They well knew that in every country there had been a multiplicity of standards, and that this fact had made the conduct of business difficult and uncertain and had opened up the way for all manner of trickery, uncertainty and dishonesty. Fully abreast with the needs of the times, they went to much expense to secure unit standards that would agree with those in general use in the country.

To quote the Constitution, Section VIII says among other matters, that "the Congress shall have power . . . (5) to coin money, regulate the value thereof and of foreign coins and fix the standard of weights and measures." Consequently, there is no reason why Congress—or perhaps the persons deputed now to act in its name—should not establish a standard ton. There would be no opposition to such a change. Some suspicious persons might think that there was an attempt to rob the public by a shortening of the ton, but if the price were reduced accordingly, as it would and should be, there might be even a disposition to feel that an actual gain had been made by the consumer.

In the few cases in which the miner is paid by the long ton and not by measure, he might feel aggrieved by the new rate resulting from the reduced size of the ton, but the union should be ready to back up a correct readjustment with its approval and influence. In fact, the union is now so solidly on the side of a proper adjustment of matters where such an adjustment is needed that its assistance would probably be no sooner asked than given. The officials of the union are so generally behind the scenes that they know all the *dramatis personae* intimately and so can readily size up the situation.

The English ton should be as dead here as as the Imperial gallon; not that either are in themselves objectionable, but because neither can exist side by side with our weights and measures. Some day we shall have so far forgotten the long ton that we shall wonder that the English have any other, and we shall say with native simplicity: "Funny people, the English! You know I never could understand how they have 2240 lb. in their ton." The same remark has often been heard about the Imperial gallon.

It is a bad business, breaking away from British standards of weight and measure, and as much to be regretted as the fact that we are getting an entirely different technical language to that which they employ. But in this case we have no choice. We cannot change to the long ton. The short ton has shown itself preferable. We may as well hasten what is so much needed and what seems to be so inevitable.

Thus May We "Unalienate" the Alien

THE FOREIGNERS at our mines are our good friends or our sullen and indifferent neutrals, to a large extent according to the way in which they have been treated. If the alien has received the "glad hand" —that hand that America so freely extends to those it would please—then, if worthy of citizenship, he is already on his way toward a full participation in our endeavors.

The foreigner in America knows little of the United States. For the most part all he knows of the country is the *rôle* that is played by his different employers. If that *rôle* is a helpful, friendly one, the foreigner is soon inducted into our national life. Where foreign-born workmen—naturalized and unnaturalized—have unburdened themselves of their money to buy Liberty Bonds, it usually has not been because they trusted the country as a whole, a country they cannot know, but because they had faith and confidence in the managers, superintendents and foremen of the company for which they worked.

If they gave their money to the Red Cross, it was as a return for the kindness and regard they had received, the ready word of friendship and the sympathy extended to them. If they are striving now more than ever to provide coal that propels our war vessels and makes guns, ships and war material, it is because they visualize in those around them, especially in those employing them, those with whom they are daily working, a people worthy of comradeship, a people they desire to see succeed in all their endeavors.

The people who complain most about the foreigner's lack of Americanism are those who sin most against him, who treat him with studied contempt. Fortunately they are few. Ignore the barrier between native born and foreigner and the barrier will fall. It is even now falling.

Wonderful indeed are the foreign-born in America. Centuries of propinquity, ages of propaganda, persecution and purchase all have failed in parts of Europe to make a homogeneous people. Here the work is done in a generation, in less than a generation, almost without any effort. The foreigner is perhaps not entirely made over. His enunciation, his strange groupings of words, his peculiarities of deportment still remain to interest us, but he becomes an American in his preferences and an American in his willingness to make sacrifices and give service.

Even the American Germans have only been about a half of one per cent. disloyal. The Liberty Loan sales have perhaps been larger among them than among our own people, for they have a thrift to which our people are strangers. Our generosity to them has, in but few cases, been a mistake. The American German has, in most cases, responded to our good will.

A stranger comes to your home from California, let

us say, and you gather round him. His differences please and interest you, and you delight to show courtesies to this visitor from a distant state. How your courtesy to him puts his own kindliness of heart in action! What a wonderful host are you and what a gentle guest is he! It will not be otherwise if we treat with kindness those of another tongue, another country and perhaps another creed. Their very "otherness" is a bond of union of great worth to those who thus recognize it. It gives them a chance to show again the things that they most prize and which they know the stranger will enjoy with them.

Look Around for a Speaker

UNFORTUNATE indeed just now is the mining village where, for lack of an adequate speaker, the war and all that it means has not come home vividly to everyone, especially every English-speaking mine worker. It is necessary that someone should be found at every plant who can declare how intimate is the relation between guns and coal, and do it so clearly that the man who labors at mining cannot fail to realize the matter. Someone is needed who will show how the mine worker contributes to the waging of the war.

The man who makes luxury goods may work negligently if he pleases. His product may be inferior in quality or quantity; the war will be finished just as soon. But the man who mines coal mines it to back up the Army and Navy. He must not falter or fail. Whatever the work others may be doing, his work is one which directly contributes to victory. Happy indeed should he be that he finds himself where he can render his country such a great service. The man in a luxury trade uses excellent raw material for a useless purpose. He destroys the labor of others, adding to it other labor, only to waste that also.

But the man who mines coal is doing useful work. His is the work of honor at this time. Every little mining town should have a forceful orator who will proclaim this fact, so that it will not be a single moment overlooked.

Some will speak lightly of his story, for there never was a story yet, however true it might be, that did not find its derider; never a bulletin or picture that some one did not find fault with it. But there are always some who will accept the story, bulletin or picture on its full face value; some who will accept at least a part of it and perhaps none who fail to retain some fragment of the thought expressed.

Where there are unions the work of speeding production may well be done through them. The union leaders have long ago seen that the mine worker is the backer of both Army and Navy in the present war. The mine worker's son and brother in uniform are required to give untiringly of their efforts, and he himself can give no less; for his work is necessary for the support of these men at the front and will in large measure reduce the loss in life and shorten the duration of the battle.

We say again, "Look around for the speaker." If you can, get him from the ranks, get a man who can speak as brother to brother. Every mine village should have its spieler to give purpose to its efforts and to bear the message of the Nation to the mine worker.

Do All Your Employees Really Know?

TOO often the officials of a company who have been reading diligently about the war in every spare moment assume that all the employees have been doing the same, and they feel it a waste of time to repeat to the mine workers what might seem obvious truths; but just lately several cases have occurred that show that there are a number of people with wholly erroneous ideas, implanted doubtless by persons having an active alien or private interest to advance.

In Hoboken, N. J., a manufacturer induced a number of his employees to buy War Savings Stamps. Probably he laid all the stress on the patriotic duty of buying them, which, of course, is an excellent form of argument for their purchase. As a result of this appeal and the pressure of fellow subscribers, they agreed to buy stamps. The propagandist or profiteer then came along with the story that the stamps were of no value, and one particularly vicious person went around buying them at a considerable margin below their cost to sell them in New York City. It took only a word to make the women, who were parting with these stamps so readily, decide henceforth to keep them. They were easily brought in line by a suggestion from someone they did not know. A difficulty, so easily removed, should never have been allowed to make any headway.

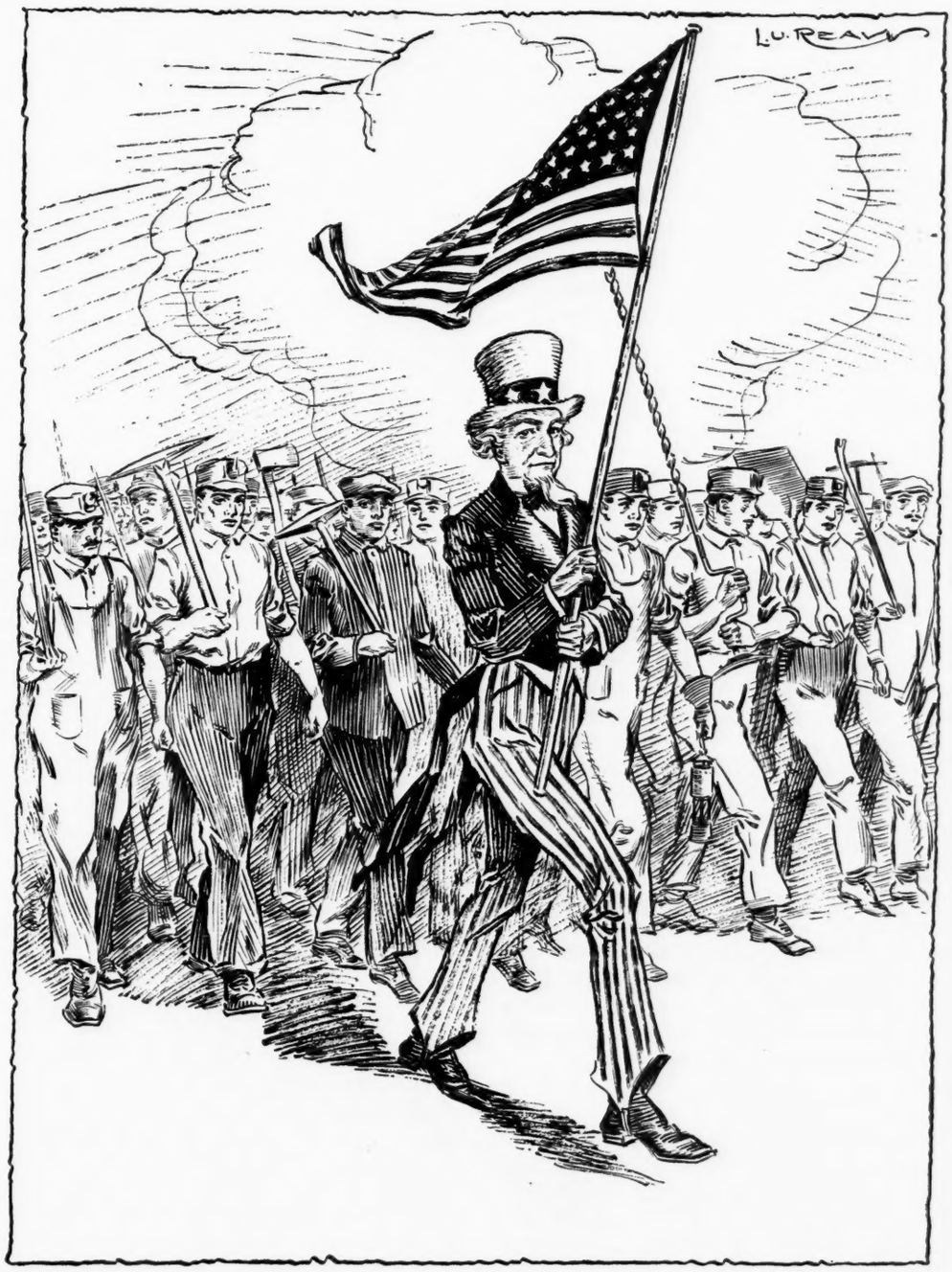
Another example: A long line of people at a dime saving bank were talking about Liberty Bonds. One man in the row declared that he would much like to buy the bonds, but he needed the interest, and he could not afford to withdraw his time deposit from the bank where he got his percentage regularly. Another even wanted to know how often he would have to pay interest on his bond after he had bought it.

Perhaps there are no men around the mines, native or foreign, who are quite as ill-instructed as these men and women, but there may be other difficulties that keep them from doing their duty, and every mine official should make it his business to learn the nature of these problems and should study how he may correct them. It does not do to take knowledge of anything for granted in these days of propaganda, especially in sections where many people cannot speak the English language.

After all, banking and investment are not easy things for a man to understand. It takes time to learn how to avail oneself of the Government's offers. The language of banking in which many of the notices are couched is more exact than clear. Where the work of acquainting men with the Government offerings has been well explained, the people are eager to buy and ready to retain the securities and stamps almost indefinitely. No one holds so tenaciously to the purchased bond as does the small bondholder. What he buys he keeps until a rainy day. He is not an uneasy speculator but a satisfied investor.

The people will be more likely to feel aggrieved at the insistence of the Government on the paying off of the bonds when they fall due than upon any of the other provisions. We wager that the man who has received 4¼ per cent. from the Government for many years without a hitch will feel quite grievously dispossessed should he, when the bond expires, have to accept payment and put the money in the bank at 4 per cent. or less.

The Army Behind the Lines



Uncle Sam might have drafted any one of us. Because he did not do so is a good reason why we should do our whole duty in the industrial army and all in step march ahead whenever Uncle Sam cries—"Forward! March! A little more pep, please. This is no route-step or go-as-you-please."

DISCUSSION BY READERS

The Mining Situation

Letter No. 1—While statistics show that the production of coal in our mines has greatly increased, it is still far below the present demand, and the question is constantly asked, "What is it possible to do to increase the production?" Public meetings have been called to discuss the question; large coal companies have held conferences with their officials; and both the Government and mining companies are giving every encouragement to miners to induce them to increase their efforts to mine coal.

At a recent meeting of the superintendents of a large coal company, the general manager, in the course of his remarks, stated that because of labor and other conditions, the company had contracted to supply considerably less coal than last year and, notwithstanding this fact, they were much behind on their contracts.

The seriousness of the coal situation is not realized by the general public. Several causes are responsible for the condition. The draft has called many men from the mines and others have left to seek work where they are offered higher pay; but, aside from all this, the miners themselves are not working as they should. The truth is, the miners are making big money and, as a rule, have an overpowering desire to spend what they make, some in drink, some in pleasure and luxury, but comparatively few in investments in Government bonds and war-savings stamps.

Instances are numerous that show the restive disposition of many miners who are making good money, but who yet are dissatisfied. One of my men who drew $70 for two weeks' pay came to me with the claim that he was "not making enough money." He named a man in an adjoining town who drew $96 for only eight day's work. Had the man worked the 13 days of that pay he would have had $156 in his envelope; but he laid idle the remaining five days, or over a third of his time, which is no exceptional case.

PLEASURE VS. WORK

While a year or two ago autos were owned only by the higher mine officials, today it is hardly an exaggeration to say that nine out of ten autos seen speeding from one mining town to another are owned and driven by foreign-speaking miners. Now, while no one would begrudge their amusement and pleasure, the fact is that the habit of a good proportion of our miners to visit their friends in adjoining towns is responsible for the loss to the country of a third of the possible production or capacity of the mines.

Few miners realize what this means to our country in the present crisis. Ninety per cent. of these men are foreign born; many of them cannot read and all they know is what they hear. The suggestion has been made that wounded soldiers who can speak their language be sent among them to inform them of the real conditions and the great need that they should work their full time in the mines. While this would do some good, my opinion is that it would not accomplish the desired result.

THE SOLDIER AND THE MINER

The question to be decided is, What is the cure for these conditions? In attempting to answer this question, it is well to remember that the Government makes the service of the boys drafted for the army compulsory. They are obliged to do every class of work required to make them hardened soldiers, and are paid $30 a month for their services, and many of them have left good positions that afforded them four or five times that amount.

If a drafted man grumbles, he is called a "slacker." But, the great army of workers at home are paid increased wages and permitted to work where they please and as they please, although their services are as essential to the success of the war as that of the fighters at the front.

Let me suggest, in closing, that the seriousness of the present situation demands that the Government should take more drastic means to keep the miner at work. If it is asked "How can this be done?" my answer is, place a Government inspector in each mining district who will act in the capacity of a truant officer. Given a list of the men absent from a mine without excuse from the foreman, the inspector would investigate at once, ascertain the circumstances and impose such a fine as may seem fit. It will do no good to send the man to prison, but a fine would send him back to the mine and make him less willing to absent himself for pleasure or other needless cause.

McIntyre, Penn. THOMAS HOGARTH.

Private Business and the War

Letter No. 1—At the present time, we hear much talk of the need of private business giving way to the Nation's interests, for the winning of the war. I was pleased with the timely verses of Berton Braley, which appeared as a Foreword in *Coal Age*, May 18, and were designed to teach the lesson of one's private interests being subserved to the necessities of the great struggle in which we are engaged.

It strikes me that this is a lesson that every miner must learn as well as men who are conducting public affairs and interests of various kinds. In every case the business of the individual must be regarded as second to his duty as a citizen and one of a great army of industrial workers.

Only recently I have been led to apply this reasoning to the case of the skilled and unskilled miners who work side by side in our mines. Take, for example, a machine mine where safety requires that the most skilled miners should be employed on pillar work and in other danger-

ous places where their work will not permit them to earn the same amount that they could if employed in easier tasks.

On the other hand, the unskilled laborer is frequently put to work on loading coal where he is practically safe and free from injury. It has happened that, in the performance of this work, he is enabled to earn comparatively larger wages than his skill and acquaintance with mining work would warrant. As a result, the skilled miner is apt to feel that there is an unjust discrimination in the choice of work, although he recognizes that it would not be right to place the unskilled man where he would be liable to injury because of his inexperience in the mine.

The mine foreman recognizes the appeal made to him and replies, "Yes, James, I am going to give you a machine-cut right handy to the stump you took out yesterday, and you and that new man whom I will send with you can load it out. When that is done you can both start mining the remainder of the stump; but you will have to watch your man and see that posts are set to keep him safe."

Suppose, now, the miner should reply that it was not his business to look after the other fellow; he must learn to do that himself. How would such a reply be regarded if made by a soldier at the front who refused to look after the safety of a comrade. He would be sent at once to the rear and be court-martialed for his disloyal attitude.

Permit me to ask, In fairness to his fellow miners and loyalty to the cause, should not every miner preserve the same attitude toward his fellow worker as is demanded of the soldier toward his comrades? Are they not all working under the same banner, and does not the same responsibility rest on the miner as on the soldier at the front? R. W. LIGHTBURN.

Perryopolis, Penn.

Shortage of Mine Labor

Letter No. 1—An item that appeared recently in *Coal Age*, May 25, p. 986, drew attention to the protest made by mine operators against the draft being made on competent and experienced miners who are daily being taken from their work in the mines and sent to war-training camps.

A short time ago a committee of coal operators made a special trip to Harrisburg for the purpose of conferring with Major Murdock. They explained to him that the draft for the army was reducing the employees in and around the coal mines to an extent that threatened to greatly interfere with the production of coal in the anthracite district. They urged that competent experienced miners employed underground should be exempted from military duty and claimed that the coal industry was being hit harder than any other necessary industry.

To the unprejudiced mind, there would appear to be some camouflage in the action taken by these operators. If it is a fact that coal companies are being crippled by the shortage of labor growing out of the necessities of war, as this committee claimed, it would seem that they should be compelled to show figures giving a correct account of how many men they have lost through the draft and how many men have left the mine to seek other work where they could get more wages. It is my belief that such figures would show that the shipyards and railroads in the country have taken more men from the mine than have been called by the draft.

In districts Nos. 1, 2 and 3, in the city of Wilkes-Barre, the records show the following number of men drafted from different coal companies in that vicinity: Lehigh & Wilkes-Barre Coal Co., 17; Lehigh Valley Coal Co., 3; Pennsylvania Coal Co., 1; and the Delaware & Hudson Co., 3, making a total of 25 men who will leave these mines, on June 24, for training camps.

It would naturally be supposed that coal companies, fearing the loss of their more experienced and competent men, would submit a list of such men and claim for them industrial exemption from the draft. On the other hand, there are numerous instances where discrimination has been shown to favorites, and where sons of bosses have received special mention. I am proud to say, here, that the feeling of loyalty to one's country has triumphed over these efforts, which have, in most cases, been spurned by the boys themselves.

Efforts of Companies To Have Men Exempted

In one instance, a large coal company left no stone unturned to have a certain young man exempted, who stated, when the report reached him, that he was "no slacker" and promptly enlisted. It is not surprising that a large number of the younger men working in the mine have recently been aroused by the situation. These let it be known, yesterday, that they would take their regular place in the draft, regardless of their work in the mine. The probability is that they were forced to take this action because men for whom exemption had been asked had been commonly termed "slackers" by their comrades.

Let me suggest that coal companies face a peculiar situation. From my observation, the shortage of men in the mines is due largely to the inducements of the larger pay offered for work in other industries. To overcome this effectively and hold their men it would be necessary for coal companies to increase wages correspondingly; but this cannot be done without increasing the cost of production of coal.

Disproportion in Pay for Mine Work

An instance came to my knowledge, a few days since, of a young man who had been employed running an air compressor, two turbines, and an electric dynamo, all housed under the same roof. He served a 12-hr. shift for a measly $3.50 a day. The man was a good engineer, but he had no regrets when giving up his job at the call of the draft. There is little wonder that the place is still vacant, and no one appears to be anxious to assume the responsibility at the small pay offered.

Comparison shows that the miner is the poorest paid workman in any industry, at the present time, and yet the product of his labor underlies production in practically all of the industries. Today, any able-bodied man can earn $3.50 for common labor, in other work than mining, and it is not strange that they are leaving the mines to seek such work.

I want to say, in closing, that the claim for exemption from draft cannot be urged with any more reason

for the miner than for the farmer, or men working on Government work in the shops and the shipyards. If these classes of workers are to be exempted, then, who will be left to do the fighting? Were miners to be exempted by a ruling of the War Department, there would be a host of men seeking employment in the mines who are not competent for that work.

Wilkes-Barre, Penn. JUSTICE.

Letter No. 2—The frequent references both in *Coal Age* and the daily papers, regarding the shortage of labor throughout the anthracite district, leads one to believe that there will inevitably result a big shortage of anthracite next winter.

The reasons for men leaving the mines in such large numbers are numerous. Some are called away by the draft, many are seeking jobs in other industries or volunteering for service in the army and other causes besides are depleting the ranks of the mine workers. Several hundred men have already left the Wyoming Valley and the same is true throughout the region.

Considerable alarm is felt among anthracite operators regarding the effect of the recent draft call, which requires Pennsylvania to furnish 3750 men for the army. Both the operators and the United Mine Workers organization are attempting to estimate what proportion of this number of men will be taken from the mines. If the present call affects the miners to the same degree as did the last call it is generally conceded that many of the mines will be forced to close down.

WHAT DRAFT OF MINERS MEANS TO THE MINES

Every miner taken away for military duty means the training of a new man to take his place, and the Anthracite Mine Law requires that a man work underground, in the mines of Pennsylvania, for two years before he can secure a certificate permitting him to mine coal or work as a miner. It is quite evident, therefore, that every experienced miner called by the draft will curtail the production of coal, which is already restricted by the lack of men.

With the hope of relieving the labor-shortage situation, a committee of four, composed of members of the Luzerne County Exemption Board, was appointed to go to Washington, in company with a committee of mine operators, to confer with the proper authorities in an effort to obtain a ruling that would exempt coal miners and skilled mine laborers from military service. I understand that similar committees have been selected from other mining counties, for the same purpose.

The problem, however, has another aspect that is equally serious. Most young mine workers balk at these exemption plans. Unwilling to assume the role of "slackers," many of them have been aroused by the deferred classifications, which have been accorded some of their number in a wholesale manner by district exemption boards. It is feared that they may take the stand of refusing to accept such deferred classifiation arising from the nature of their work in the mines. An official of the United Mine Workers organization is authority for this statement.

While it is true that this stand of young workers reveals a super kind of patriotism, there is another phase of the situation. A growing feeling of discontent, because of what is termed "unjust discrimination," results from men being moved forward on the draft list by reason of the wholesale exemptions secured by the coal companies for favorites in their employ.

In the opinion of some operators, the situation demands a change in the anthracite mine law, which requires two years of labor underground, in the mines of Pennsylvania, before a man can receive a miner's certificate. Many operators say that six months is sufficient to give a man the required training for the work of mining coal. Personally, I believe this would be a grave mistake and is not required by reason of the scarcity of miners in the anthracite field.

Kingston, Penn. FRED B. HICKS.

Detecting Marsh Gas by Smell

Letter No. 1—Reading the inquiry in regard to carbon monoxide being a "supporter of combustion," *Coal Age*, June 15, p. 1128, shows that one cannot rely wholly on what the textbooks say. In the minds of many, there is some question in regard to marsh gas having no smell.

Methane or marsh gas is described as a "colorless, odorless and tasteless gas"; yet many men declare that they can smell it. In the hope of clearing up this point and throwing some light on the subject, allow me to submit the following:

When going my rounds as an examiner I have frequently suspected the presence of gas and rarely failed afterwards to find it in sufficient quantities to give a flame cap in the lamp. Perhaps, however, the perception was not wholly by smell, though mainly so as I believe.

An Alberta mine inspector tells me he has often had the same experience. Once, while I was accompanied by another examiner, we entered a room and he exclaimed, "There is gas in here, I can smell it." We found no gas, however, and as we came out he said, "I guess it was the timber I smelled."

I am inclined to think it was the timber, in that case. All the timber used around here is conifers from the eastern slope of the Rocky Mountains. It is highly resinous and gives off a pleasing odor for several months after it is cut. It is usually where the odor of the timber is noticeable that I have suspected gas. As a rule the odor of the timber is stronger where much gas is present. It is only when the timber is old and has lost its odor that the presence of the gas makes no difference.

My explanation is that the methane acts as a solvent upon the more volatile portion of the resins of the timber and renders them more active, in much the same manner that kerosene acts upon pitch. It may intensify whatever action the odor has on the sense of smell.

Coalhurst, Alta., Canada. T. EDWIN SMITH.

First Aid to the Uninjured

Letter No. 7—The writers on this subject have drawn attention to a most important feature of the safety-first movement. More than anything else in coal mining is the necessity of aiding men to recognize the dangers with which they are surrounded and take precautions to avoid possible accidents. This aid must be given

to the man before he is injured. What most of us need, however, is a good supply of common horse sense.

When a man has been injured seriously, perhaps through carelessness of his own, or when a man has been arrested for a violation of mining law, he is in a position to appreciate more fully the foreman's solicitation on his behalf. But, it is important to bring men to the same state of appreciation before their neglect has resulted in serious injury to themselves and perhaps to others. It may be necessary to punish a man for carelessness, in order to bring him to appreciate means taken for his safety.

Chances Taken by the Average Miner

Nobody will deliberately pull a ton of rock or coal down upon himself; but scores of miners will continue to load a car, under a roof that they know is not safe, intending to secure the loose top as quickly as they have loaded out the coal beneath it. Men take these chances continually, and it is for the foreman to use radical means, if necessary, to cure them of the habit. No man should take chances on his life and health.

Many mine foremen are bewildered at the prospect of impressing on their men the need of taking greater care in their work and many hesitate to enforce strictly the safety rules of the mine. The task will be made easier if such men will classify the accidents that commonly happen in mines, owing to men's neglect and carelessness. It will enable them to apply the right remedy in each case, and better results will follow.

Cause of Greatest Number of Accidents

By far the greatest number of accidents in mines occur through falls of rock or coal at the working face. Nine out of ten of the accidents of this class can be avoided by the exercise of due care and caution on the part of the miner and a close supervision of his work by the mine foreman and his assistants. Because the miner is prone to ignore the laws and safety rules made for his own protection is no excuse for a mine officials' laxity in enforcing them.

Let every mine foreman place accidents of this kind in a class by themselves and study the best means to avoid them. He will soon discover that a large portion of the responsibility rests upon himself. He will find it necessary to enforce a rigid discipline in respect to the timbering of working places, and to supply and keep on hand in each place a sufficient amount of timber of the right size and kind. He will see that these provisions must be accompanied with a close supervision of each miner's place and work. He will permit no one to load a car before he has secured roof reported as unsafe. Dangerous rock on haulage roads and travelingways must have an equal share of the mine foreman's attention.

Accidents Due to Blasting

A second class of accidents embraces those due to the blasting of coal and rock. There is less excuse for accidents from this cause than those in timbering. No unseen hand threatens the miner in preparing a blast, as in loading a car under a roof judged to be solid and safe when, in reality, a hidden slip or a "pot" formation renders it insecure. There are but few legitimate excuses for accidents due to blasting coal. Nearly every box of powder contains printed instructions regarding the safe handling of the explosive and the precautions that must be taken in its use.

The accidents from blasting are not so many, however, and usually arise from careless practices, such as using a short fuse, crimping a cap with one's teeth, smoking a pipe or cigarette, or approaching a light too close to the powder when preparing a charge. A miner will sometimes be found riding a motor trip with explosives on his person; he may carelessly carry a few caps with his powder; or he may allow the explosive in his charge to come in contact with a live wire and, in many other ways, do things that he knows he should avoid.

Accidents from the Movement of Cars

I will refer to one more class of accidents, namely, accidents due to the movement of cars. These are largely the result of bad management in the mine, or disobedience to rules by the miner. Where mechanical haulage is performed, men should not be permitted to travel the haulage roads, but a separate travelingway should be provided whenever practicable. Refuge holes should be cut in the ribs and a suitable clearance at the side of the track be maintained wherever it is necessary for men to travel a haulage road.

Strict rules should be enforced in regard to men riding motor trips and violations of such rules should be suitably punished. All tracks should be maintained in good condition and protection should be afforded against live wires, wherever men or animals may come in contact with the same. If sufficient attention is given to these and other provisions for the safety of men, there will be a noticeable decline in the number of accidents occurring in the mine.

Thomas, W. Va. W. H. Noone.

Strong vs. Weak Stoppings

Letter No. 2—Previous to the mine enactment of 1893, in Pennsylvania, there were many extensive mines in which the stoppings were built of wood. Sometimes these were of the most flimsy character, the material used being often procured from old store boxes. Fortunately, no great explosions occurred which would, undoubtedly, have blown out every stopping on the entry, from the face to the shaft bottom, and made the work of rescue very slow and tedious, because of the necessity of rebuilding all the stoppings.

Such flimsy stoppings may be rightly described as being very flexible. At times, a heavy shot would move them so that they required to be repaired before rescue work could proceed. Indeed, stoppings of that kind were short-lived and had to be constantly renewed. In my opinion, any form of light stopping that is easily blown out is dangerous, and the same is true of a collapsible stopping. A light stopping soon begins to leak air and makes it impossible to conduct the air current, in sufficient quantity, forward to the working face.

The suggestion made by E. P. Brennan, in his letter, *Coal Age*, June 8, p. 1077, that a modified system of mining be used so as to form an explosion barrier at the mouth of each pair of cross-entries could only be employed in the laying out of a new mine. It

has made me think, however, that some systems of mining are more favorable to the development of an explosion than others. I am inclined to believe that the longwall system advancing has the cleanest record in this respect. In that system, there are practically no stoppings other than the packwalls.

My experience has taught me that the best form of mine stopping is one consisting of a good solid packwall faced with 18 in. of brick on each side. The brick should be laid in cement. This form of stopping should be built on all main and cross-headings. A 50-ft. pillar should have a 12-ft. packwall for a stopping, and all stoppings should be set into the ribs a depth of 12 in. The pack should be well rammed as it is brought up to the roof so as to form an air-tight joint at the roof.

My preference is for explosion-proof stoppings, in any system of mining. I believe that, while such stoppings will not prevent the occurrence of explosions, they will greatly expedite the work of rescue, which would then only be delayed by the entries being blocked by possible roof falls. In a mine with strong stoppings, it seems to me that there would be less wrecking of the passageways, as the explosive blast would have a straight course and quickly spend itself.

Perryopolis, Penn. LUMEN.

Letter No. 3—A common mining practice has been to use two kinds of stoppings, designated as temporary and permanent. The temporary stoppings are usually built by using 1-in. boards, slabs or refuse lumber of some sort daubed with clay or cement to prevent leakage of air. This form of stopping is simple and may be built by any one understanding the use of saw, hatchet and nails. When built of rough boards of single thickness it will stop about 50 to 75 per cent. of the air traveling from passing immediately back into the returns. The permanent stopping is a more elaborate affair and has, no doubt, received much more attention in the selection of materials and methods of construction. The state law makes it compulsory to build the permanent stopping of incombustible material and of ample strength. No stipulations are made concerning the thickness.

In a mine entirely free from combustible gas, having no large accumulations of fine coal dust, any available material such as top rock or slate will make a satisfactory stopping if the work is done in a skillful manner. When a mine is gaseous, with coal-cutting machinery producing large quantities of finely divided coal dust, the permanent stopping becomes a matter for careful consideration. Before deciding on the kind of materials most suitable for the work, it will be well to understand the double purpose of a mine stopping.

First, it must be air-tight to insure the complete distribution of the entire ventilating current. Second, it should afford quick release when the mine resistance or pressure—due to accident—is above normal and to provide a short circuit for air and rescue work in the event of a serious disaster.

The stopping built of slate or rock, having double walls with a pack of dirt, clay or other material between them, is much in favor with a large majority of mine officials. When this is made thick and strong, it is said to be proof against shock arising from an explosion. The explosion-proof stopping is the outcome of an idea advanced by certain authorities in support of their belief that its indestructibility tends to throttle the explosion in its incipiency, by increasing the mine resistance. In support of this idea one writer says: "It has been found that old mines, where the mine resistance is great, are practically immune from dust explosions; they occur most frequently in new mines where the mine resistance is comparatively small."

RESISTANCE TO DEVELOPMENT OF AN EXPLOSION

In this instance there seems to be some confusion with regard to the term "mine resistance" in its relation to an explosion. What is commonly known as frictional resistance or total ventilating pressure is of small moment in accelerating or retarding the development of an explosive wave. What does count is the difference in resistance between a narrow working place with four solid walls, including indestructible stoppings, and another place where the stoppings are arranged to afford a quick release of high resistance brought about by abnormal conditions. It will be found that where old mines are free from explosions the condition of the ventilation is the most potent factor.

The writer referred to, in a further effort to strengthen his claim, says: "It is well known that the easy removal of insufficient tamping increases the danger from a blownout shot, and an increase in the length of the hole and a corresponding increase in the length of the tamping reduces the danger." This is very true. Now let us assume that we withdraw the tamping—affording a complete release of all resistance—then what will happen? There will be flame and smoke unaccompanied by an explosion.

Again, assume that we stem and tamp the hole solidly, its entire length, using the same amount of explosive and making the resistance complete and effective; what will be the result? A rending, smashing, shattering explosion of full destructive strength and power will be developed. The indestructible stopping would be the ideal of perfection if we could be absolutely certain of the future conduct of a mine.

MINE STOPPINGS IN THE FUTURE

It is a safe prediction to make that the mine manager in the future will arrange his stoppings for ventilation on a much different plan from that of the present or past. Permanent stoppings will be constructed with a view to their flexibility and thickness. All stoppings within 300 ft. of the working faces will probably be built in keeping with the advancement made in the science of mining.

These temporary stoppings will be a portable arrangement, set in a frame after the fashion of a trapdoor, and held firmly in position by springs adjusted to withstand the normal resistance of the mine and made to release or collapse when the resistance becomes abnormal. The quick release of all resistance will effectually prevent the development and continuity of an explosive wave, if applied near the point of origin.

Much can be accomplished that is thought to be impossible in respect to the prevention of mine explosions, and I shall be glad to learn the views of others.

Confluence, Penn. H. E. GRAY.

INQUIRIES OF GENERAL INTEREST

Designing a Mine Siphon

Kindly explain what conditions are required for the successful operation of a siphon in a mine; or, in other words, what elements enter into the design of a mine siphon. INSIDE FOREMAN.

Pittston, Penn.

The essential requirements for the successful operation of a mine siphon are the following:

1. The pipe line must run full; that is to say, the size (diameter) of the pipe must be such that it will conduct the required flow of water, under a velocity determined by the effective head and the frictional resistance of the pipe. This is necessary in order that the water flowing through the pipe shall sweep away any air that might otherwise separate from the water and accumulate at the crown of the siphon.

2. In order that the siphon shall run full continuously, the diameter, length and effective head must bear a fixed relation, in both branches of the pipe. For example, the ratio of the fifth power of the diameter, in inches, to the length of the pipe, in feet, multiplied by the effective head, in feet, must be the same for both the intake and discharge ends of the siphon. The *effective head* at the intake is the atmospheric pressure minus the vertical lift from the level of the water in the supply basin to the crown of the siphon. The *effective head* in the discharge end is equal to the vertical height of the crown of the siphon above the point of discharge minus the atmospheric pressure.

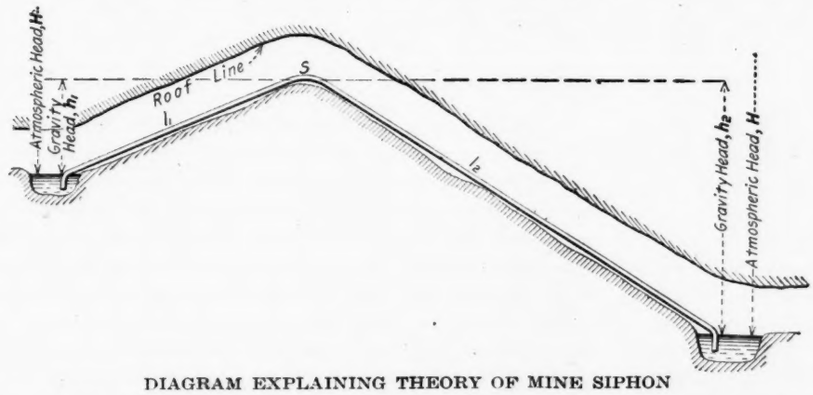


DIAGRAM EXPLAINING THEORY OF MINE SIPHON

3. There must be no leaky joints in the pipe, and all unnecessary obstructions, in the form of sharp bends in the pipe, valves, and other hindrances must be avoided as far as practicable. The mouth of the pipe must be kept sufficiently submerged beneath the surface of the water in the supply basin to permit no air to enter the pipe at that end.

A siphon that fulfills these requirements will run continuously. In order to start the siphon, it is necessary to fill the two branches of the pipe through an opening at the crown, which must then be tightly closed by a good valve. During the filling of the pipe, both the intake and discharge ends must be tightly plugged or suitable gate valves must be provided at these points and closed until the pipe is full. Sometimes a small pump is used to fill the siphon instead of pouring the water into the pipe at the crown.

When a siphon line is not properly proportioned, as here explained, it will empty itself in a short time or the accumulation of air at the crown will prevent its operation. To avoid the first of these conditions it is common to use throttling valves to control the flow of the water at the discharge end, and to escape the second condition an air trap must be provided at the crown, through which the accumulated air can be withdrawn from time to time as necessary.

Referring to the accompanying figure and calling the atmospheric head, H, expressed in feet of water column, the gravity head, in feet, length of pipe, in feet, diameter, in inches, on the intake end, h_1, l_1, d_1; and, on the discharge end, h_2, l_2, d_2, respectively; the effective intake head is $H-h_1$, and the effective discharge head h_2-H. The relation of these elements, as stated in the foregoing rule is then expressed by the formulas

$$(H - h_1)\frac{d_1^5}{l_1} = (h_2 - H)\frac{d_2^5}{l_2}; \text{ and } d_1 = d_2\sqrt[5]{\frac{(h_2 - H)l_1}{(H - h_1)l_2}}$$

These formulas are practical and should always be used to determine the sizes of pipe best adapted to different conditions regarding the length and vertical lift, or rise and fall, in each branch of the siphon. Also, it is well to remember that the atmospheric head H will depend on the depth of the mine and the system of ventilation employed. In practice, a good aneroid should be first compared with a standard mercurial barometer on the surface, and then taken into the mine where the increase in the reading is noted. The increase, if any, is added to the reading of the barometer on the surface and the result multiplied by 13.6, the specific gravity of mercury, and divided by 12 to reduce inches to feet, will give the atmospheric head H, expressed in feet of water column.

Straightening Brittle Rails

Kindly explain how brittle iron rails can be straightened without first heating them, as claimed by a correspondent, *Coal Age*, May 4, p. 847, without breaking the rails or taking them out of the mine. DOUBTFUL.

Scranton, Penn.

We understood that our correspondent would tell us his method later and hope that he will do so soon. We have never heard of brittle iron rails being straightened without first being annealed by applying heat.

EXAMINATION QUESTIONS

British Columbia Examination, First Class. May 14, 1918

(Selected Questions)

Ques.—How many cubic feet of marsh gas will be required to be generated in a mine each minute to render dangerous a current of 30,000 cu.ft. of air per minute?

Ans.—The percentage of marsh gas required to render mine air dangerous will depend on the character of the coal mined and the method of working. In the mining of a soft, inflammable bituminous coal, especially with machines, the danger point may be reached when somewhat less than 1 per cent. of gas is present in the air. Much will depend on the inflammability of the coal and its suspension in the air.

On the other hand, in the mining of a harder and less inflammable coal, 2 per cent. of gas in the air may mark the danger line. In the mining of anthracite, 2½ per cent. of gas will generally indicate the approach to danger. Taking 1 per cent. of gas in the return current as indicating the danger line, the air will form 100 — 1 = 99 per cent., and the total volume of the return current is then 30,000 ÷ 0.99 = 30,303 cu.ft. The volume of gas that must be generated to produce this condition is therefore 30,303 — 30,000 = 303 cu.ft. of gas per minute.

When 2 per cent. of gas marks the danger line, the total volume of the return current is 30,000 ÷ 0.98 = 30,610 cu.ft., and the volume of gas generated, in that case, is 30,610 — 30,000 = 610 cu.ft. per minute.

Ques.—Explain the law of diffusion of gases and its effect on their behavior in mines. Give rule and example showing how to find the comparative velocity of diffusion of the different gases.

Ans.—The law of diffusion states that gases of different density diffuse into each other in the inverse ratio of the square roots of their densities. The effect of diffusion is to cause a rapid and intimate mixture of the gases in contact with each other, and the density of the mixture will depend on the proportions and densities of the two gases.

The relative velocity of diffusion of a gas into air is equal to the reciprocal of the square root of its density referred to air. For example, the relative velocity of diffusion of marsh gas into air is $1 \div \sqrt{0.559} = 1.337$. The relative velocity of diffusion of carbon dioxide into air is $1 \div \sqrt{1.529} = 0.808$. In each case, the relative velocity of the diffusion of air into the gas is 1 or unity.

Ques.—What effect has a blownout, windy or a tight shot in the presence of firedamp?

Ans.—In the explosion of any of these shots, more or less flame is produced and projected into the surrounding air at a high temperature. If firedamp is present, it will be ignited by the projected flame and a gas explosion will follow, which may or may not be propagated throughout the mine, depending on the gaseous and dusty condition of the mine air.

Ques.—If a volume of 1200 cu.ft. of marsh gas is mixed with pure air in such proportion that when exploded all the carbon in the marsh gas combines with the oxygen in the air what volume of carbon dioxide will result, measured at the same pressure and temperature?

Ans.—In the complete combustion of marsh gas (CH_4) where all of the carbon of the marsh gas unites with the oxygen of the air to form carbon dioxide, the volume of the latter gas produced is equal to that of the marsh gas burned. In this case, there will be produced 1200 cu.ft. of carbon dioxide, measured at the same pressure and temperature.

Ques.—How would you remove firedamp from a section of a mine, after an explosion? What dangers would you expect to meet and how would you overcome them?

Ans.—Much will depend on the conditions existing in the mine and the arrangement of the workings; but, in general, it may be stated that only experienced miners must be employed in the work, and these must be equipped with safety lamps of an approved type and in good condition. No advance must be made ahead of the air current, which must be conducted forward by repairing stoppings that have been injured and erecting lines of brattice where this is necessary to carry the air forward. When the brattice is extended, sufficient time must be given for the current to sweep away the gas and make further advance possible and safe.

When entering a mine after an explosion there is danger of men being overcome with the afterdamp of the explosion. There is also danger of igniting a fresh body of firedamp that may have accumulated since the explosion occurred. To avoid being overcome in the afterdamp, exploring parties should advance slowly and with caution, making frequent tests to ascertain the condition of the air. Caged mice or birds should be carried and closely watched to observe any symptoms that would indicate the presence of poisonous gas. These little animals are prostrated much more quickly than persons and their presence is a safeguard against the presence of carbon monoxide which will not be indicated on the flame of the safety lamp. No advance must be made ahead of the air without the use of breathing apparatus.

Ques.—Find the weight of 1 cu.ft. of marsh gas, at a temperature of 70 deg. F., when the barometer is 29.5 in.

Ans.—The weight of 1 cu.ft. of air at the given temperature and barometer is

$$w = \frac{1.3273 \times 29.5}{460 + 70} = 0.07387 \text{ lb.}$$

Its specific gravity being 0.559, the weight of a cubic foot of marsh gas is $0.559 \times 0.07387 = 0.0413$ lb.

COAL AND COKE NEWS

Harrisburg, Penn.

Prominent coal operators declare that they will appeal from Provost Marshal Crowder's refusal to grant deferred classification to men employed in and about the mines, and that if necessary they will carry it up to President Wilson. Pointing out that the tonnage of anthracite mines decreased over 100,000 tons last month over the same month last year, they say that unless some action is taken at once that each month will show a greater decrease and that the country will face a greater fuel shortage next winter than it experienced last year. The draft increments of June 24 and 27 will take about 5000 men away from the mines, and as the working force is 32,000 short at present, they point out that the situation at present is extremely critical.

Thousands of dollars in compensation will be received by dependents of mine workers killed at work on company property as a result of a final decision by the Supreme Court in the compensation case brought by Mrs. Julia Gurski, of Nanticoke, against the Susquehanna Collieries Co. in which the Supreme Court upholds the award of the Referee. The decision is one of the most important to mine workers that has resulted since the passage of the Workmen's Compensation Act.

Charleston, W. Va.

Despite power shortage and car shortage, the mines in the Kanawha district succeeded during the week ended June 15, in increasing the total production in the field from 144,000 tons to 170,000 tons—an increase of over 25,000 tons—this being the largest production recorded in the Kanawha district for several months. With practically a full supply of cars in the field Monday the mines were at a standstill in many places with the power off, a number of the larger companies, such as the Cabin Creek Consolidated Coal Co., being compelled to shut down.

It was not through any assistance from the railroads that the mines in this district were enabled to increase their production, but because of the fact that the coal was moved out on barges. The inadequacy of the car supply is shown in the fact that 2037 hours were lost during the week ended June 15 through car shortage alone, labor shortage being responsible for the loss of only 151 hours. Operators claim that with anything like a fair car supply they will be able to materially increase production. The supply of cars for the present week has been much better than during last week, averaging about 70 per cent.

Mines reached by the Kanawha & Michigan Ry. received almost as many cars as they can load during last week.

Definite control of the Kanawha & Michigan and the Coal & Coke railroads, both of which are coal-carrying roads, seem certain in view of the visit here last week of C. H. Markham, regional director of the Allegheny regional district under the National railroad administration. If such does prove to be the case, it will work an improvement in the interchange of cars between the Kanawha & Michigan and the Coal & Coke railroads.

Fairmont, W. Va.

As long as transportation facilities in the Fairmont field are kept up to the mark at which they have been for the last few weeks, the production in that field will be most gratifying. Last week the supply of cars was sufficient to keep coal moving, there having been 1769 cars in the field Monday, 1561 Tuesday, when every mine was working, and an equally good supply Wednesday. Operators in the Fairmont district, as well as in other fields, believe, however, that the maximum supply will not be reached nor will it be possible to reach it until coal cars doing general duty on miscellaneous freight roads are ordered back to coal roads and used exclusively for the transportation of coal.

The car supply in the New River field during the week has fluctuated considerably, being good one day and bad the next. Furthermore, the operators are still bothered by the fact that they cannot depend on regular power supply. Of course, this does not apply to all the mines in the district, because there are several of the larger operations in the New River section which depend on their own power plants. Operators in New River territory have not so far given any attention to the question of greater efficiency in the mines, having been able to load all the cars they receive, but it is predicted by some of the operators in that district that when there is a full car supply operators will be hard put to load all cars. The same coal men say that there is little doubt of there being a coal famine this winter, and that the fact might as well be faced now.

Huntington, W. Va.

Twelve of the fourteen districts composing the West Virginia Coal Association were represented at the meeting of the executive committee at the Frederick Hotel, this city, on June 21. This was the first session of the committee since the reorganization a short time ago, and it was an eminently satisfactory one throughout. Discussion and action were all grounded on the proposition that the maximum production of coal is one of the most essential factors in warfare, and there was unanimity of sentiment that the fullest coöperation should be given the Government. This sentiment was put in concrete form by resolutions.

The association now represents the entire coal tonnage of the state, steam and gas. The two districts that were not represented at the meeting are likely to join within a short time, it was stated. Information given at the meeting leads to this belief, and there is no tenable cause for their remaining outside the fold.

The following officers were elected to serve for the ensuing year: J. G. Bradley, chairman, Dundon, W. Va.; G. H. Caperton, vice chairman, Charleston, W. Va.; A. H. Land, treasurer, Logan, W. Va.; W. H. Cunningham, secretary, Huntington, W. Va.

Marion, Ill.

A meeting was recently held here between the operators of Williamson, Franklin and Saline Counties and the district officials of the United Mine Workers from the same counties, and also the officials of the Central Illinois Public Service Co., together with its attorneys and Special Agent Horton, of the United States Fuel Administration, with a view to straightening out the difficulties encountered by the operators in the three counties in contending with the extremely poor service furnished by the Public Service Bureau.

The Government agent was evidently not so well informed about Illinois coal-mining conditions as he might have been, and the result was that the meeting was anything but harmonious. The operators and miners were opposing the Public Service Company and the Government official.

It developed that the Government plans had been approved of by the Public Service Company, who had seen them previously to the meeting. The plan proposed was that the mines curtail the power requirements in their contracts and take not to exceed 70 per cent. of same. It also developed that the Government wanted one mine to work one day and alternate in idleness with another mine the next day. The operators and miners proposed that the power be cut off from all other industries in the field and give the mines the preference.

Another proposition was that the Interurban line between Eldorado and Carrier Mills be shut down during the day while the mines needed the power. The Public Service representatives stated that it would be impossible, for while the power company and the railroad were conducted by the same company, the bondholders of each were different and that the bondholders of the railroad would not permit the shutting down of their operations.

Another proposition was that the mines could get more power if they worked during the night hours instead of the day hours, and there were some extremely heated arguments, over which the Government agent got somewhat uneasy.

The meeting, after two or three hours of this kind of wrangling, broke up about as informally as it had convened, with nothing accomplished, only perhaps that some harder feelings existed between the Service company on one side and the operators and miners on the other.

Dallas, Tex.

Owing to a slacking up in orders for mine-run coal and the hearty response on the part of people of Oklahoma, Texas and other states to the appeal of the Federal Fuel Administration for the householders to purchase and store coal for winter use, there is now being developed a plan that has for its purpose the abolishment of all prepared sizes of coal and the production of nothing but mine-run. The plan is proposed for the duration of the war, and already has the approval of the Fuel Administration, officials of the United Mine Workers of America and coal operators of Texas and Oklahoma.

According to coal operators of the McAlester-Wilburton (Okla.) coal fields, the manufacturing industries have been slow in making purchases of coal for winter use. The private citizens who depend on coal for heating, it is said, have laid in their winter supply and such purchases are now negligible, but the manufacturing plants and other large industries have no coal on hand for winter.

It is claimed for the plan proposed that with the elimination of other grades and classes of coal except the run-of-mine, all the labor now required to separate the different grades of coal would be eliminated and the plan would make for continuous operation of the mines. The matter of loading coal on cars at the mine would also be simplified, as the mines would produce but one grade of coal and there need be but one loading system.

Victoria, B. C.

The Canadian Collieries (Dunsmuir) Ltd. has practically completed development work in connection with the opening of a new coal mine at South Wellington. The Douglas seam has been struck with a thickness of between 10 and 12 ft. at the face. On Monday, June 17, the new tipple, screening plant, etc., were in operation for the first time, and within a short time the output will be maintained, if expectations are realized, at between 750 and 1000 tons a day. The product of this company at both its Extension and Comox collieries, Vancouver Island, runs to about 70,000 tons a month.

The Canadian Western Fuel Co., of Nanaimo, B. C., has commenced operations on the sinking of a pair of shafts for the opening of a new mine on the company's farm near Nanaimo. These shafts are of ample dimensions, and are situated 150 ft. apart. They are being sunk to tap the Wellington seam and will mean the area southeast of Jingiepot mine. Extensive drilling operations have been under way for some time to prove the measures and locate the best position to place the shafts. Excavating of the surface subsoil to bed rock has been completed and concrete collars placed around the mouth of the shafts. Work on the hard stratified bed rock commenced on Monday, June 17. The seam will be uncovered at about 350 ft. depth, and if conditions are normal coal should be reached in about four months. The cost of opening and equipping will involve an expenditure of about $300,000. The company is producing upward of 70,000 tons a month from its mines now in operation and looks forward to a considerable augmentation of this total. This will make the third new mine opened in the vicinity of Nanaimo, Vancouver Island, during the past year, the other two being now in coal. One was developed by the Canadian Collieries (D) Ltd. and the other by the Granby Consolidated Mining and Smelting Company.

PENNSYLVANIA

Anthracite

Browntown—Several families have been notified by officials of the Pennsylvania Coal Co. to vacate their homes, as further caving is expected. During the past year a number of homes have been badly damaged in Browntown as a result of mine settlings.

Plains—Thirty-three full-fledged certified miners were among the 109 men from the 30 county exemption districts, with headquarters here, who left for Camp Lee, Petersburg, Va., on June 27. The list also contains numbers of men employed in and about the mines in the transportation and preparation of coal. Steps had been taken to obtain exemption for the miners called in this quota, but through a recent order of the provost marshal the board was instructed to include the men in this call.

Georgetown—For the second time within a week a large section of the surface of Northampton St., in front of the property of the Settlement Association, caved in on June 20. Traffic on the trolley line was stopped when the cave became serious. The cave caused the water mains to burst. The escaping water tended to hold up the side of the cavity, but after the water had been shut off from the mains the surface depressions extended over a considerable area. The cave is over old workings of the Empire No. 4 colliery of the Lehigh & Wilkes-Barre Coal Co.

Bituminous

Waynesburg—The Crucible Fuel Co. has purchased 52 acres of coal land in Cumberland township, Greene County, from J. Calvin Gwynn, for a consideration of $27,578.25.

Blairsville—The Davis Coal Co., operating several mines around Blairsville, is opening a new mine about two miles from town near Smith Station. The coal is the Pittsburgh vein and is 7 ft. thick at the new operation. Frank G. Davis is general manager of the company.

Coral—The Potter Coal and Coke Co. has started the construction of 12 additional houses at its plant here to care for the additional workmen which they are employing. These houses are of the bungalow type, similar to the ones erected by this company last year, when it took the Coral mines over from the Wharton Coal and Coke Company.

Harrisburg—According to a report issued by the Chief of the Department of Mines, Seward E. Button, there were 368 fatalities in the bituminous coal mines for the first five months of 1918, a decrease of 11 over the same period last year. There was an increase in the fatal accidents on the outside of the mines, however, over the same period last year. In 1918 there were 71 fatal as compared with 52 in 1917. Most of the outside fatalities were due to accidents by cars.

Indiana—One of the largest crowds ever present at an affair in Indiana gathered the other night in a patriotic celebration and "Clean Coal" campaign. Special trains and street cars were run on all the railroads to carry the miners from every mine in Indiana County to this city that evening. The chief speaker was John P. White, of the United States Fuel Administration, and former president of the United Mine Workers. Other speakers included wounded British and French soldiers who are in this country on leave. The miners pledged 100 per cent. efficiency and to load clear coal.

Uniontown—Disposition of $3,797,472.45 is shown in the schedule filed with the referee in bankruptcy of the sale of 1100 acres of Greene County coal land by the trustees in bankruptcy of J. V. Thompson, former coal baron and banker, to the H. C. Frick Coke Co. The schedule of distribution will be presented shortly to the United States District Court at Pittsburgh for approval. The court has already confirmed the sale and directed the transfer of the title. The magnitude of the sale is revealed by some of the minor items appearing upon the schedule. It takes $3678 in revenue stamps alone to convey the deeds to the property. The trustees of the estate will receive a commission of 1 per cent.

WEST VIRGINIA

Crumpler—United Pocahontas Coal Co. is installing a complete water-works system for its tenants.

Powhatan—The Pocahontas Coal and Coke Co. is installing a filtering system in connection with its water-supply line.

Coopers—The Mill Creek Coal Co. contemplates building new houses to take care of miners and increased production.

McComas—The American Coal Co. is installing sanitary septic tanks at each of its operations—Crane Creek, Pinnacle and Piedmont.

McDowell—The McDowell Coal and Coke Co. will build additional houses, preparing to take care of new miners and to increase their production.

Landgraff—Responding to the request of the Government for more coke, the Empire Coal and Coke Co. is rebuilding and firing up all ovens possible.

Thurmond—Picking tables are being installed at the mines of the Alpha-Pocahontas Coal Co. at Alpoca, the object being to insure cleaner coal.

Yolyn—The Paragon Coal Co. has recently completed the construction of a new tipple at its No. 2 mine here, costing $6000. Fifteen new houses are being built by the Paragon company at a cost of $15,000.

Fairmont—New officers have been elected by the Fairmont Coal Club for the period of six months. They are Brooks Fleming, president; Clarence D. Robinson, vice president, and Brooks S. Hutchinson, secretary.

Accoville—New shaker screens and a new loading boom costing $8000 have been added to the tipple of the Deegans Eagle Coal Co. of this place. The same company has also let the contract for ten houses to cost $10,000.

Ceredo—The Coal Branch Coal Co. of this place began operations last week according to an announcement made by Harry S. Stout, general manager. The equipment for the operation consists of a tipple and other mining machinery. Coal from the mines is to be conveyed by trucks.

Elkins—From being the smallest, the Grassy Run mine of the West Virginia Coal & Coke Co., at Roaring Creek Junction, has now become its largest operation, 25 cars of coal a day being shipped from this mine. A large number of houses of modern construction for the miners at this point have also been built recently.

Fairmont—The Trainor Coal Co. has sold its property on Coon's Run to J. W. Preston and associates of Johnstown, Penn., who took control June 18.

The Helen's Run and Bingamon branches of the Western Maryland R. R. are now supplied with cars from the Monongah division of the Baltimore & Ohio, and the reports of these mines are handled the same as other mines in the Fairmont district. Heretofore the Western Maryland has had specially assigned cars sent here by that line of railroad.

Grafton—The Hope Natural Gas Co., which has a byproduct plant at Downs and one at Hastings, in Wetzel County, is to erect another such operation near Moatsville in Barbour County. This announcement would indicate that the venture at Downs is meeting with the success anticipated. For several weeks past agents of the Pittsburgh concern (or men believed to act in such capacity) have been taking options on farms from the mouth of Raccoon creek where it empties into Teter's creek to a point two miles above Moatsville. More than a thousand acres of land has already been optioned, it is reported, at an average of $85 an acre. The rumor is that a $4,000,000 plant is to be erected on the J. O. Freeman farm two miles east of Moatsville, but the amount to be expended is probably a high estimate.

Huntington—The mining and shipment of coal from the mines of the Peter Cave Coal Co., on Coal River, will be begun early next month. D. J. Pancake is general manager of the company and Frank Kerns is superintendent, with headquarters at Alkol, W. Va.

D. C. Hewitt, his son, A. M. Hewitt, and R. A. Morris, who has been general superintendent of the Hewitt timber operations, were the principal figures in a coal deal consummated at Welch this week under the terms of which the producing mines of the Buck Creek Coal Co. and the Warfield Coal Co. were sold to the Easton Coal Co., and coal lands recently acquired by D. C. Hewitt were leased to the Easton company at a minimum royalty of $12,000, the coal lands being located just across the river from Kermit, W. Va. The purchasing company plans to invest $300,000 in additional equipment with the result that the development is expected to make it possible to produce 35 cars of coal daily.

Charleston—The West Virginia Coal and Coke Co., with general offices at Elkins, will in the near future open another mine in the Copen field, on the Coal & Coke Ry., near Bower, in the Pittsburgh seam, to be known as No. 12 mine. The plant to be erected will include a wooden tipple and other mine accessories.

The Royal Block Coal Co. at Dotson, on Coal River, is not only preparing to open up their No. 2 mine there at a cost of $20,000, but is also expending $10,000 on erection of a new tipple there.

The Carbon Coal Co., at its No. 2 mine, contemplates the construction of a coal-storage bin in which to store coal produced at times when cars are not received for loading. By doing this the company hopes to enable the miners to work every day. The same company has purchased and will install a box-car loader at its No. 3 mine within the next 60 days, and also in order to secure the highest quality of coal is building at its No. 6 mine a tipple with automatic scales, picking table, etc. The tipple is nearing completion.

INDIANA

Brazil—The Indiana Industrial Board has awarded judgment to Walter Griffith, of Coalmont, for $4,500, and he will draw $9.08 a week for 500 weeks. The judgment is to be paid by the Vigo Mining Co., for which he was working when injured by a fall of slate in a coal mine.

ILLINOIS

Pana—Coal rights under 53 acres of land purchased two weeks ago by Harry Tanner from the Hayward estate were sold a few days ago to the Smith-Lohr Coal Co. The coal rights were sold at $30 per acre. Besides the coal rights Mr. Tanner sold the coal company 15 acres of land adjoining the mine company on the west.

Decatur—This city has been much concerned over the order that coal can be shipped into Macon County. The mines of Macon County will not produce enough coal for the City of Decatur and the county, and much coal must be shipped in from other localities. The mines at Lovington, 20 miles east of Decatur, supply much of the coal which is shipped into Macon County. Decatur people have invested about $200,000 in the Lovington mines and wish to see the coal mined from Lovington for Decatur consumption. Much of the coal now being mined in Macon County is being stored in Decatur. A number of Decatur manufacturers have gone to Chicago to protest against the order against shipping coal in from other localities.

KENTUCKY

Heiner—The Daniel Boone Coal Co., which has offices in Columbus, Ohio, is activey at work on a new mine in the Hazard field. A modern tipple is being constructed and entries are being driven. It is planned to have an output of 2000 tons daily and the new mine will be opened by the first of the year. With the new mine the company will have three operations on the tract, two at Lennut and one at Heiner.

TEXAS

Santo Tomas—The big tipple of the Santo Tomas coal mines, 23 miles north of Laredo, Texas, was destroyed by fire and an explosion of unknown origin on June 5. The lives of 60 men who were at work in the mine at the time were threatened, but all were saved. The loss will amount to about $75,000, but the damage will be repaired at once and operation of the mine continued with but brief interruption.

Foreign News

Minto, N. B.—A party of American capitalists, including F. S. Peabody and W. H. Leland, representing the Peabody coal interests, recently visited the Minto coal field in company with Fuel Controller Magrath. Mr. Peabody was favorably impressed with the coal areas and expressed his willingness to spend $500,000 under favorable conditions. He subsequently conferred with Premier Foster, of New Brunswick, with a view of securing coal areas.

Personals

A. S. Hamilton has been appointed general mechanical superintendent over all the operations of the Canadian Collieries (Dunsmuir) Ltd.

H. R. Bissell, formerly with the Century Coal Co., of Baltimore, Md., has been made

superintendent of the Cambria Coal Co.'s two mines at Bellaire, Ohio.

John Dando has resigned his position as mine overman at No. 4 Mine, Comox Colliery, Canadian Collieries (D) Ltd., and has been succeeded by **Charles Pharnam.**

Thomas Taylor has resigned his position as mine overman at No. 5 Mine, Comox Colliery, Canadian Collieries (D) Ltd., and has been succeeded by **William Walker.**

P. A. Grant has resigned his position as state mine inspector of the Ninth District of West Virginia to accept the superintendency of the Sunbeam Coal Co., of Logan, W. Va.

William Roper, of the Marden mine, Pacific Coast Coal Mines, Ltd., South Wellington, B. C., has resigned and accepted a position with the Canadian Western Fuel Company.

C. J. Norwood and **F. C. Horton,** of Lexington, Ky., have been reappointed by Governor A. O. Stanley of Kentucky as state mine inspector and assistant mine inspector respectively.

F. E. Harriman, who for many years was coal traffic manager of the New York Central lines east of Buffalo, was last week elected vice president of the Clearfield Bituminous Coal Corporation.

Ralph M. Keeney has been appointed assistant general manager of the Thompson-Connellsville Coke Co. plants at Republic, Penn. He succeeds Andrew Thompson, son of J. V. Thompson, who has retired from the company.

W. Guy Srodes, for several years superintendent of the Cambria Coal Co.'s two mines in Bellaire, Ohio, has been promoted to assistant manager and placed in charge of operation of twelve mines at Athens, two at Zanesville and two at Bellaire.

A. H. Krom, formerly secretary of the American Association of Engineers, has been made director of the Division of Engineering, with headquarters at 29 S. La Salle St., Chicago, Ill. Through this division the Government will supervise the proper distribution and conservation of the technical service of the country.

H. K. Mack, for eight years commercial agent for the Burlington R. R., has been appointed supervisor of coal traffic for Southern Illinois by the Railroad Administration, through R. H. Aishton, divisional fuel administrator of Chicago. Mr. Mack will be located at Herrin, Ill., from which point he will supervise distribution of coal cars and coal traffic in the Southern Illinois district.

Obituary

James Wilson, aged 68 years, one of the best known mining men in northeastern Pennsylvania, died suddenly on June 18 at his home in Ashland, Penn. He was for 20 years superintendent for the Philadelphia & Reading Coal and Iron Co. in the Ashland district.

Dr. James Douglas, for many years president and lately chairman of the board of directors of Phelps-Dodge & Co., copper mine owners, died at his home in New York City on June 25 in his 81st year. Dr. Douglas was rated one of the foremost metal and mining authorities in the world.

Lorenzo D. Devore, chief deputy in the division of mines attached to the Ohio Industrial Commission, died at his home, Columbus, Ohio, June 24, from cancer. He was 55 years of age and had been connected with the Ohio mining department since 1908. He served most of the time as deputy inspector until about 15 months ago, when he was appointed chief deputy. He leaves a widow, four sons and three daughters.

Trade Catalogs

Hazard Wire Rope. Hazard Manufacturing Co., Wilkes-Barre, Penn. Price List No. 18. Pp. 49; 4¼ x 7¾ in.; illustrated. Describes the several kinds of wire ropes manufactured by the concern and gives tables of prices, weight per foot in pounds, approximate breaking strain, etc.

Jeffrey Retarding Conveyors. Jeffrey Manufacturing Co., Columbus, Ohio. Catalog No. 232. Pp. 32; 8½ x 11 in.; illustrated. The catalog contains complete information regarding the construction and operation of Jeffrey retarding conveyors, as well as numerous illustrations of successful installations.

Strom Bearings—Data Sheets. U. S. Ball Bearing Mfg. Co., Chicago, Ill. Pp. 68; 4¾ x 7¾ in.; illustrated. The data sheets are so compiled as to furnish in a convenient form essential information regarding the dimensions of all types of Strom bearings. A revised list of prices in effect on and after Apr. 22, 1918, is also included.

Sullivan Rotators. "DP-33," "DR-33." Sullivan Machinery Co., Chicago, Ill. Bulletin 70-F (replacing 70-A). Pp. 28; 6 x 9 in.; illustrated. The rotator described in this bulletin is claimed to be an "all around rock-drilling machine." It is equipped with automatic steel rotation, is built in separate air and steam types, and may be used as a hand tool or on a mounting.

Illustrated Book of Parts and Accessories. Ironton Engine Co., Ironton, Ohio. Illustrated, 9½ x 11 in. The book gives a list of parts for locomotives, storage batteries, motors and accessories for the Ironton storage battery locomotive. Standard parts are shown for both A and D types, while parts used exclusively in either type and parts for motors and controllers are shown in separate sections. The Ironton company evidently went to considerable trouble and expense to prepare this book, a copy of which will doubtless be of considerable worth to users of Ironton equipment.

Industrial News

New York, N. Y.—The Wilputte Coke Oven Corporation has removed its offices and engineering department to the Winfield Building, 469 Fifth Ave., northeast corner of 40th St., New York City.

Orange, N. J.—The Edison Storage Battery Co., manufacturer of storage battery locomotives, etc., has opened a Philadelphia sales office at 740 Land Title Building. J. A. Hurst, sales engineer of the company, is in attendance.

New York, N. Y.—John F. Bermingham, president of the Delaware, Lackawanna & Western Coal Co., who is the representative in Greater New York of the Anthracite Committee of the United States Fuel Administration, has had his jurisdiction extended so as to include all of Long Island.

Kansas City, Mo.—The Southwestern Interstate Coal Operators Association, at its annual meeting recently, elected for continued service the officers who had held the places during the past year. F. W. Lukins was reëlected president. W. P. Hawkins, of St. Louis, was reëlected vice president at large; C. N. Fish, of Leavenworth, Kan., was reëlected secretary, and George Manual assistant secretary and treasurer. W. L. A. Johnson, was reëlected general commissioner.

Louisville, Ky.—According to figures recently compiled by W. B. Bryant and G. H. Sowards, of the Kentucky fuel administration's office, Louisville annually consumes 1,672,052 short tons of coal, of which 1,003,052 short tons represent domestic coal and 660,000 tons represent steam coal. This is taken from the annual receipts by rail and river on an average over a five-year period. The annual coal consumption for the state is given at 5,606,475 net tons.

Columbus, Ohio—A ruling has been announced by the Railroad Administration which effectually puts Ohio wagon mines out of commission. The new ruling supersedes a recent order that wagon mines are to be supplied with open-top cars only after all tipple mines secure 100 per cent. supply. Under the recent ruling no open-top cars are to be given wagon mines under any consideration. Unless they use box-cars the mines will have to suspend operations entirely.

Toledo, Ohio—Activity at the docks for the loading of lake coal kept up fairly well during the past week, although the total loaded by the Hocking Valley and Toledo & Ohio Central docks was not so large as during the previous week. During the week eending June 21 the Toledo & Ohio Central docks loaded 71,000 tons as compared with 79,000 tons the previous week. The total since the opening of navigation is 555,000. The Hocking Valley Docks loaded 144,634 tons as compared with 160,713 tons the previous week, making a total for the season of 1,036,927 tons.

Clarksburg, W. Va.—A. Lisle White discussed a phase of the labor question at a recent meeting of the Clarksburg Coal Club which has been emphasized by developments since that time, not only in coal circles but in other lines of industrial activity. Mr. White referred to "registration dodgers," whose method of evading military service is to move from one state to another, working in mines, and avoiding registration by frequent changes of names. Since Mr. White's talk there have been developments which indicate that such a course will be almost impossible under regulations now being considered.

Fort Worth, Tex.—The coal operators of Texas met at Fort Worth last week and apportioned among the various Texas mines the amount of coal required by the Government, estimated at 60,000 tons. The agreement among the operators was prompt, and all promised hearty coöperation with the Government in every way possible. Among the Texas operators who attended the meeting were W. H. John, of Bridgeport, assistant district fuel administrator; E. S. Britton, Texas and Pacific Coal Co., Thurber; Judge E. B. Ritchie, Strawn; L. Wueste, of the Olin Coal Co., Eagle Pass, and W. F. Nance, Newcastle.

Christiansburg, Va.—C. C. Mathey, formerly of Galena, Ill., has been elected president of the Anthracite Coal Corporation, recently organized and incorporated here. The company is composed chiefly of men from Illinois and Wisconsin. According to the plans of the company, as outlined by President Mathey, about 3500 acres of coal land are to be thoroughly developed, the machinery for which work has been bought and is now being installed. It is expected to make the output of the mines for this year fully 300 tons per day. This is to be increased in 1919 to 500 tons per day, and after that time to 1000 tons per day.

Cincinnati, Ohio—The E. L. Sternberger Coal Co., of West Virginia, has filed suit in the United States District Court against J. F. Scherer and H. W. Mountain, of Lawrence County, Ohio, for $16,303.30, alleged to be due for breach of contract for the delivery of coal. The Sternberger company alleges that in March, 1917, the defendants agreed to deliver to the company the entire output of their coal mine from May 6, 1916, to May 6, 1918, at the rate of not less than 350 tons a week, but that a shortage of 10,868 tons between the contract and the coal actually delivered occurred, occasioning the claim for damages.

New York, N. Y.—The New York Coal Barge Operators' Association has issued the following demurrage rules for this harbor: "Two days to be given at the loading ports to load the barge and three days at the destination for unloading. At the expiration of the lay days, a charge of 3c. per ton on the full cargo capacity of the boat as per bill of lading to be charged for each and every day, over the lay days, $12 per day minimum. Sundays and holidays to be excluded from the lay days, providing coal piers or consignee are not working, but each day to count after the lay days are up. Twenty-four hours to constitute a day."

Louisville, Ky.—In the case of R. E. Boyd against the Petersburg Coal Mining Co. and J. W. Lam, the court dismissed plaintiff's petition, and gave the defendant judgment on a counterclaim of $763.89. Boyd sued for $45,436.11, alleging breach of contract made Apr. 26, 1916, to sell coal in the Falls Cities for the company, he to sell 300 cars the first six months and 600 cars the latter six months, but after delivering 60 cars the company broke its contract. The counterclaim was made on the grounds that plaintiff failed to pay for coal shipped. He admitted that he had not paid for it, and the court held that he violated the contract thereby.

Cincinnati, Ohio—Through a recent order of the U. S. Circuit Court, John S. Jones, of Columbus, has purchased all the outstanding stock of the Sunday Creek Coal Co., and all the legal complications which have been a source of litigation for more than 10 years are now cleared away. In the order the court approved a contract entered into between John S. Jones and the Hocking Valley Ry. Co. to take over $2,606,000 face value of bonds at 25c. on the dollar. The purchase of these bonds perfects the title to 25,000 acres of coal lands in Athens, Hocking and Perry Counties in the heart of the Hocking Valley producing field. Several years ago when Mr. Jones purchased the property it had $14,000,000 against it in bonds. Among other bondholders were the Kanawha & Hocking Coal Co., the Continental Coal and Coke Co. and the New York Central Railway Co. The bonds of the coal company were redeemed largely by the transfer of property for which the bonds were originally given as payment. Since Mr. Jones has acquired the clear title to the property steps will be taken to reorganize, taking the name of the Sunday Creek Coal Company.

MARKET DEPARTMENT

Weekly Review

Nothing New in Market Conditions—Demand Urgent and Stocks Low—Bituminous Coal Production Exceeds All Previous Figures in Spite of Car Shortage—Anthracite Labor Problem Serious—Coal Shipments to Northwest Behind Schedule

AN ANALYSIS of coal-market conditions the past week discloses nothing of a startling nature. The competitive features which in former years dominated the news and added the spice of variety to the task of the reviewer are lacking in these days of Government regulation and administration. The statement that "Demands for all kinds of coal are urgent with stocks inadequate," though somewhat stereotyped by now, is nevertheless as true this week as it has been for weeks past.

The impetus given to coal production by the pulling together of the railroad and fuel administrations was reflected in the truly wonderful accomplishment of the bituminous coal mines during the week ended June 15, when 12,571,000 short tons of soft coal were mined. This output breaks all previous records and is deserving of more than passing notice when it is considered that a serious car shortage still exists; that thousands of experienced miners have been taken by the draft, and that labor conditions in general are demoralized.

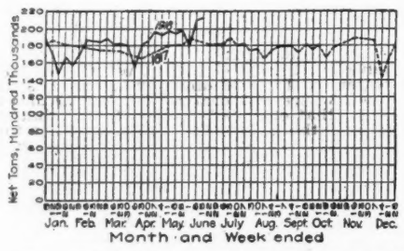
Anthracite production for the week under review totaled 41,960 carloads, the best showing that has been made in many weeks. The labor problem at the hard-coal mines continues to cause much uneasiness, as this branch of the industry is losing men at the rate of 2000 monthly. Steps are being taken to have the Government give relief to a condition which promises to become critical unless the proper remedies are applied speedily.

While the tonnage of anthracite for May was but slightly less than the quantity shipped in May, 1917, yet it must be emphasized that the increase in steam sizes produced from banks—or culm piles—was the only thing that kept the aggregate production near that figure. The output of fresh-mined coal will continue to diminish just as long as labor at the mines diminishes.

Many of the larger operators are now shipping their entire output to the lakes, thus necessarily reducing the stocks available for steam and domestic use. The vessel movement is generally good, and a considerable tonnage is going to the Northwest. On the whole, however, shipments are behind schedule, principally because of the late opening of navigation.

COAL PRODUCTION

Production of bituminous coal during the week ended June 15 equalled and even exceeded the record production of the week preceding. The output of soft coal (including lignite and coal made into coke) is estimated at 12,571,000 net tons, an increase over the week of June 8 of 170,000 net tons, or 1.4 per cent., and over the current week of 1917 of 1,137,000 net tons, or 10 per cent. The average production per working day is estimated at 2,095,000 net tons as against 2,067,000 net tons during the week of June 8 and 1,906,000 net tons during the week ended June 15, 1917.



The preliminary estimates show increased production during the past week in central Pennsylvania, Tennessee and Kentucky, and Alabama. Central Pennsylvania production increased 4 per cent., Tennessee and Kentucky 5 per cent. and Alabama 5 per cent. Material decreases occurred in the Pittsburgh and Panhandle districts and in Ohio. In the former fields 10 per cent. less coal was produced than during the week preceding and in the latter fields 7 per cent. less.

Anthracite shipments totalled 41,960 carloads, an increase of 206 carloads, or 3 per cent., during the week ended June 15.

Beehive Coke—Beehive coke production in the United States for the week ended June 15 is estimated at 658,000 net tons, an increase over the week preceding of 22,000 net tons, or 3.5 per cent. The average per working day reached 110,000 net tons, the highest daily average during the past three weeks. The principal operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production of beehive coke during the week ended June 15 at 391,070 net tons, the plants being operated at 77.2 per cent. of their present capacity, identically the same ratio as the week preceding. During the week slight improvement was reported in labor conditions, but such improvement, however, was offset by slightly greater car shortage. The same operators produced 190,550 net tons of coal.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended May 25	June 1	June 8	June 15
Bituminous shipments, 123 roads.	207,036	187,875	219,839*	222,432†
Anthracite shipments, 9 roads...	40,594	31,762	40,754	41,960†

* Revised from last report. † Subject to revision.

Byproduct Coke—During the week ended June 15, little change was exhibited in operating conditions of the byproduct industry. Slight improvement was reported due to repaired plants and to better market conditions, the plants of the country being operated at 88.5 per cent. of their present capacity—the highest point since May 25. Material increases in production are reported by Alabama, New York, Tennessee and New Jersey. The improved production in Alabama and New York is attributed to repaired plants, in Tennessee to better supply of byproduct coal, and in New Jersey to both improved coal supply and repaired plants. Massachusetts was the only state reporting a material decrease in production. The decline is attributed to repairs to plant. Labor conditions in Pennsylvania show no improvement, while slightly better market conditions existed in Minnesota.

BUSINESS OPINIONS

Dry Goods Economist—Strikes of operatives in spinning plants have reduced the week's production of wool and worsted yarns. Production of most lines of dry goods bids fair to be curtailed by the Government plans as to restriction of fuel supply. Transportation delays continue to retard the delivery of goods to merchants and of raw materials to manufacturers. The indications are, however, that transportation westward from territory near the eastern seaboard, where the bulk of the country's manufacturing plants are located, will improve as the Government's plans for relieving freight congestion mature.

Bradstreet's—Potentially, civilian demand is of large volume, but inability to find free merchandise in large quantities naturally lessens the power of sellers to fill orders, and as most markets are dominated by the exigent needs of the Government, trading is being conducted in the confirmed belief that deliveries can only be had when and as the war situation becomes less imperative. On the other hand, movements in such important lines as textiles are somewhat crimped by the uncertainties arising from price stabilization, lack of knowledge as to its final effects rendering it necessary for sellers as well as buyers to temporarily mark time, as it were.

American Wool and Cotton Reporter—As long as importations of wool continue there will probably be a reasonable supply, but if developments make it impossible to keep up importation, or if they become negligible, the situation with regard to even Government production might be affected seriously. The supply of wool is not overlarge for any particular plant, and possibly manufacturers are working on a narrower margin than they are used to; but machinery is being kept in operation up to the limit. In many ways the recent conferences between the representatives of the Government and manufacturers have had a restricting effect upon business. There is every reason for conservative buying because the entire problem has not yet been settled. The sooner the prices are definitely fixed and the sooner the details are established, the better it will be for the market.

The Iron Age—The disappearance of Chicago as a basing point for bars, plates and shapes is an important outcome of the Washington conference. The 25 per cent. freight advance adds to the advantage a sole Pittsburgh basing brings to Central Western and Eastern mills that for nine months have had to absorb freights to Chicago. The change was due in part to the fact that Chicago mills are loaded up, so that 200,000 tons of ship steel for the Pacific coast must be rolled in Youngstown, Pittsburgh and farther eastern mills. With no definite system of pig-iron priorities, furnace companies are making shipments largely to foundries working in essential lines. Contract deliveries are going by the board in many cases and other foundries designated from Washington are get

ting iron. England's order for 180,000 tons of basic iron, to be shipped in September, October and November, is likely to be divided between the North and the South. If silicon tolerance is raised to 1.25 per cent. the South can take more, with the advantage of shipping from Southern ports.

Marshall Field & Co.—Merchandise billed for both current and future delivery shows a large increase over the corresponding week of a year ago. Road sales for both immediate and future delivery are in excess of those of the same week in 1917. Customers have been in the market in fewer numbers. Collections show a satisfactory increase over the corresponding period last year. The domestic cotton market is firm.

Atlantic Seaboard

BOSTON

Clamor from other sections about all the coal going to New England not borne out by the facts. So far movement is but slightly improved over May figures. Continued anxiety over outlook. Railroad stocks diminish instead of increase. Valuable time lost. Grain shipments to start by July 15. Bottoms at Hampton Roads not yet resumed, schedule and dumpings slow. Baltimore & Ohio deliveries cease to come through all-rail and for New England destinations are likely also to be "zoned" via Curtis Bay piers. Lean arrivals by water. Fuel authorities begin wholesale diversions under new distribution plan. New Lake-built steamers appear on coast from week to week. Anthracite steam sizes come forward in good volume. Buying increases to such extent that tonnage available will probably be less and less as season advances. Rail shipments of domestic sizes show fairly well but water receipts are still sluggish.

Bituminous—The order dated June 10 directing the district representative at Altoona to ship to New England on the basis of 4500 cars as a weekly quota has apparently given other sections an attack of heart-burn, although thus far the "order" is going into effect with extreme slowness. If the coal were shipped as provided on paper, the share of this territory for "commercial coal" would be less than 20 per cent. As it is, neither the Shipping Board nor eastern Pennsylvania has occasion for anxiety, considering the very thin yield the order has as yet produced for New England. There seem to be hitches in the program, and while the latter has apparently been approved by the Railroad Administration, there are still some traffic questions to be smoothed out. Meanwhile, this territory drops farther and farther into arrears as compared with a year ago, and the task of equitable distribution becomes increasingly complex. Experts from Washington decided early in the year that 30,000,000 tons should be New England's quota, and it is only our portion of the 30,000,000 that should come to this territory from central Pennsylvania that Mr. Storrow is trying so hard to secure.

As a check on the actual volume moving through the five gateways, it appears that the best recent day was June 20, 661 cars. The average, however, for 21 days was only 490, a matter of but 20 cars daily increase, and this from all the producing districts now open to all rail destinations for New England. The most recent "New England order" was to build up the total movement from central Pennsylvania to 4500 cars weekly, including railroad fuel and every other requirement; in other words, an average movement of 1700 cars weekly from that district was to be raised, 2800 cars or nearly 165 per cent. Conservative opinion does not hold that any such increase is probable, and the 4500 are doubtless destined to be as famous as the order of Jan. 3 for 500 cars daily, which actually yielded in excess of 300 cars on only one day and showed an average for something over 100 days of 100 cars per day. The numerical designations applied to these orders are something for eager consumers in other sections to conjure with.

That buyers here are in a state of genuine alarm over the outlook has become a trite saying, but the days go on and still slim receipts from every quarter. Important activities are operating on very narrow stocks and consumers generally are dazed. There are so few directions toward which they can turn and each source of supply seems a little less dependable than the others. Conservation measures are being well supported and some surprising progress has been made.

The railroad fuel situation is particularly urgent. One of the larger roads is repairing storage plants and is able to run on current receipts, but others, like the Boston & Maine and the Boston & Albany, find daily receipts actively inadequate and are making further and further inroads into storage. If relief is not had within a few days, one of the systems will be obliged to confiscate coal in transit. This only shows the extent to which the New England situation has been allowed to drift. The May average for fuel coal daily through the five gateways was but 98, while the average for 20 days in June was practically 110 cars, a gain of only twelve.

Boat arrivals at Hampton Roads are still irregular. On June 21 the dumping dropped to less than 13,000 tons, the highest day since the 16th having been 35,000 tons on the 19th. Against a normal tonnage of 60,000 tons this seems rather a poor showing. The June total for New England will therefore be considerably less than the May figures, and New England receipts will be that much farther behind. At all times recently there has been a surplus of coal over bottoms, and not yet have the Hampton Roads shippers felt very seriously the shortage of labor.

Loadings at Baltimore, Philadelphia and New York show slight increase over May, the total tidewater tonnage from all ports for New England for the first 21 days in June amounting to more than 900,000 tons. Shipments all-rail from the Boston & Ohio and Western Maryland have practically ceased to New England points and the increased volume over the Baltimore piers is beginning to materialize. From the ships operated by the Shipping Board and subject to allocation by Mr. Storrow's committee of shippers a considerable allotment was made this week for Baltimore loading and it is likely this movement will increase materially as the season advances. Receipts at all the rehandling piers here are light, several of the distributors being hard put to it to meet the current needs of consumers who look to them for supply. One of the results of this scarcity of water coal is the renewed activity on the part of the fuel authorities in diverting coal in transit all-rail. A liberal use of this power is contemplated by the new distribution program and the flow of coal is bound to be closely watched under these circumstances.

Each week more of the new lake-built steamers appear with cargoes of Cape Breton coal, discharge and go to the loading ports to join the coal fleet. That is one of the few encouraging signs in the coastwise trade, and it is quite possible that during August receipts will show a decided increase through this additional cargo space and the increased movement via the Baltimore piers.

Prices at Boston on the smokeless coals are still on a high basis. Recent cargoes of New River have sold all the way from $8.35 @$9.90 f.o.b. cars Boston for distribution inland, the range varying with demurrage and other contingent charges.

Anthracite—The average movement of steam sizes of anthracite through the five gateways for 21 days in June was 183 cars daily, as compared with a daily average of 558 cars of domestic sizes. The rail movement begins to show the result of instructions a fortnight ago to increase shipments in that direction. Water shipments are still held down by the precautions being taken in the forwarding of tows. It is a great pity that the most favorable weather of the year cannot be used to greater advantage.

NEW YORK

Anthracite shipments short and lack of supplies causes dealers to worry. Consumer with winter coal in bin considered fortunate. Miners continue to leave operations and further appeals are to be made to Washington. Increased freight rates become effective. Dumpings of anthracite and bituminous show increase.

Anthracite—The situation, with receipts of fuel comparatively light, continues to be a source of worry to the trade. At this time of the season, when retail dealers should be filling their yard bins for next winter's drive, they are practically without any coal and the prospects are not encouraging. Fortunate, indeed, the dealers say, is the household consumer who has the whole or any part of his winter's fuel in his cellar bin. With an urgent demand from all sections of the country where anthracite shipments are permissible, this market is not in a position whereby it can expect to obtain more than its allotment of tonnage.

The increase in freight rate of 30c. per ton ordered by Mr. McAdoo, Director General of Railroads, went into effect on June 25. This makes the freight rates to the lower ports $1.85 per ton for the sizes above pea coal and $1.75 per ton for pea coal and the smaller sizes.

The heavy demand for coal is having its effect upon the stock market. A contributing reason for the steady buying of the anthracite coal stocks may be found in the much higher prices some of the smaller sizes of coal now bring.

The report of dumpings at tidewater for the week ended June 24 shows 7245 cars of anthracite dumped as against 7131 cars dumped the week previous, an increase of 294 cars, while there were shipped from the mines during the week ended June 15 41,960 cars, an increase of 1206 cars, or 3 per cent. over the preceding week.

Governor Whitman's attention has been called to the failure of Dr. Garfield to appoint a successor to former State Fuel Administrator Wiggin. The Merchants' Association has interested itself in the matter, while the trade is anxious that the vacancy be filled quickly.

Supplies of the domestic sizes have made no appreciable increase. While statistics show a larger number of cars dumped here, considerable of this coal went to other sections outside of the Metropolitan district.

The buckwheat coals are in good demand, and there is a good supply. Some of the companies are enabled to store small quantities of barley, but this tonnage is not large. Culm is being offered freely, but as a rule is only purchased by those who are able to obtain bituminous.

Current quotations, per gross ton, f.o.b. tidewater, at the lower ports are as follows:

	Circular	Individual		Circular	Individual
Broken	$6.75	$7.50	Buck	$5.15	$5.90
Egg	6.35	7.10	Rice	4.65	5.10
Stove	6.60	7.35	Barley	4.15	4.30
Chestnut	6.70	7.45	Boiler	4.60	....
Pea	5.20	5.95			

Quotations for domestic coals at the upper ports are 5c. higher on account of the difference in freight rates. Prices for buckwheat, rice, barley and boiler are not fixed by the Government.

Bituminous—Conditions are slightly improved, due to a better car supply and transportation facilities. At this market receipts show a slight increase and movement was better, but there are no free coals to be picked up by the spot buyer. Regular customers are obtaining a better supply, but far from what they want.

There were dumped 7239 cars during the seven days ending June 24, as compared with 6630 cars the previous week, an increase of 609 cars. Government statistics show that during the week ended June 15, 222,432 cars of bituminous were shipped as compared with 219,839 cars during the week ended June 8, an increase of 2793 cars. It is also reported that production last week increased in the central Pennsylvania district.

The effect of the increase in freight rates which became operative on June 25 will not be felt immediately in the trade owing to Dr. Garfield's order that the increase shall not be added to any coal now on hand and that it may be included only in prices charged for coal upon which the higher rate actually has been collected by the railroads. The increase will mean an advance of from 40 to 50c. per ton on tidewater coal, depending upon the district from where the coal comes. It is understood that one road has announced that its rate to this tidewater will be $2.15 per ton, an increase of 50c. over the previous rate. Shippers are, however, uncertain as to what the increase is and are awaiting definite information from the proper authorities.

PHILADELPHIA

Anthracite tonnage heavy to New England. Local dealers expect heavy shipments later. New freight rates effective June 25. Unfilled retail orders pay higher prices. Steam trade disturbed. Buckwheat on retail preferred list. Dealers object to stopping bag deliveries. Coal solves rent profiteering problem. Labor supply hinders production. Bituminous trade dissatisfied with New England preference order.

Anthracite—To record local conditions recently is to tell of empty yards, disgruntled dealers and an impatient public. The New England market continues to have the call, and while all houses continue to ship heavily, one of the big companies practically shipped its entire production of prepared sizes there toward the latter part of the month.

We have recently interviewed a number of dealers, who are leaders in the trade, and who profess to believe that after the middle of July shipments to this city will be materially increased. It is becoming quite apparent that some radical move

must soon be made if the dealers are to make any material reduction in the heavy tonnage domestic coal orders which have remained unfilled since early spring. As the receipts of many dealers during June ran behind their allotment it will be necessary to make substantial shipments here during July if next month's quota is to be finished and this month's shortage made up. This is not allowing for any increase, the details of which have not as yet been announced, but for which the dealers are anxiously waiting.

The new freight rates went into effect on the 25th inst., and on domestic coal amounts to an increase of 45c. a gross ton, which makes the rate on the bulk of the coal reaching this market $1.95, although on shipments from some of the other regions it is $2. and $2.11. This increase has placed the dealers in an even more difficult situation as to the deferred orders on their books. It is absolutely certain that hundreds of orders will remain unfilled by Sept. 1, when the fall increase in the price of coal goes into effect to the amount of 30c.; and this with the freight increase of 45c. makes a total increase of 75c., which they will have to explain to innumerable customers. Of course, the dealers are protected as to price, but that does not make their task the less easier in explaining the situation to customers who expected the coal in their cellars months ago at the lowest price in effect.

The steam business is in a state of chaos, and it is understood will be further disturbed. This week the local administrator issued a circular letter addressed to all the Philadelphia dealers, advising them that No. 1 buckwheat had been placed on the preferred list by the U. S. Fuel Administrator and forbidding them to store more than one day's requirements at any plant without a special permit from the local office. In the same letter the dealers were advised to deliver no coal of any size to private garages, whether occupied partially as a dwelling or not, nor to private greenhouses. They are informed that in the autumn it will be determined whether such buildings are to be allowed to receive any coal.

The local trade has also been much upset to learn of the desire of the municipal sealer of weights and measures to prohibit the further delivery of coal for domestic use in bags, which has become quite popular in the residential sections in recent years. The city officer argues that in times of scarcity of coal it makes it too easy for drivers to yield to the temptation of disposing of a bag or so before the coal reaches the cellars of the buyers. A committee composed chiefly of surburban dealers called on the dealer and explained to him if only because of the extremely high cost of bags they would be glad to give up the practice. The difficulty is that in the suburbs a great proportion of the coal cannot be chuted, even if they had the equipment, which at this time they are unable to provide. The wagons now used for this bag business would be useless, and they appealed against any such action being taken at present. The question is still in abeyance.

Chairman Lewis of the local fuel administration has made a ruling that has endeared him to many householders. With the army of new workers now in the city there has been much trouble finding homes to accommodate them. This has led to quite a scandal, as profiteering landlords have been promiscuously raising rents and refusing to give leases for more than a month at a time. Under these conditions most people were afraid to order a winter's supply of coal, for after getting the coal in the rent might be raised to prohibitive figures and they be compelled to vacate. Plans were put in operation to secure national legislation to correct the evil, but the chairman came across with a simple plan that bids fair to effect a cure. Landlords are warned that if they refuse to give a lease until next April to any tenant who fulfills his part of the obligation, no coal will be permitted to go into the house before Apr. 1, 1919. Mr. Lewis made the statement plain when he said the property owner who tried to put the tenant out without cause other than his desire to profiteer will find himself with a property on his hands for which no fuel can be obtained. He is also on record as ruling that any landlord who will not put the heating apparatus of a house in condition to burn coal economically will be compelled to do so.

The labor situation at the mines continues to cause much uneasiness, as there is an average monthly decrease of about 2000 men. Steps are being pressed all the time to have the Government give relief to a situation which will eventually become critical. While the tonnage for May was but slightly less than a year ago, yet it must be recalled that the increase in steam sizes produced from banks was the only thing that kept the aggregate production near that figure. The production of freshmined coal will continue to diminish just so long as labor at the mines diminishes.

Bituminous—The shippers continue to remain dissatisfied at the New England preference order. The shipment of 900 cars a day to that region, they claim, badly disrupts their business connections in this vicinity. They stand in the position of being desirous of giving all their trade, wherever located, at least a fair proportion of the output. The car supply has fallen off considerably during the past week, as many shippers report only a 60 per cent. supply, although it is admitted that if the supply were 75 per cent. of rating it would be about all the operators could load on account of the labor shortage. The brokers continue to receive a fair proportion of coal

BALTIMORE

Steady improvement noted in character of bituminous shipments, which, however, are lighter. Anthracite situation far from satisfactory to trade or public.

Bituminous—There are two outstanding features to the soft-coal situation here at present. One is that the shipments to this territory have lightened, principally because there have been less diversions, whether due to improved railroad movement or other causes. The other is that there has been less complaint by far as to the quality of the coal coming through. The Government is growing more and more to regulate the shipment of coal from the mines in regard to quality and not merely to depend upon rejections at tidewater pools. The result has been that the jobbers here have been called upon to dispose of less of the rejected coal; not always an easy matter where customers can see the prospect of getting any better grade coal at the same Government figure. It may be remarked that while the industrial world here absorbed the coal diverted to the section, there was lacking any element of rush that might have been expected. The business world has apparently in many cases failed to take to heart the lessons of short supply of last winter. The Government order that the new increase in freight rates is not to touch coal already shipped or held in stock will not affect any great quantity of fuel here as there is not much of an accumulation at any point.

Anthracite—The order on freight rates applying to hard coal is likewise not destined to hit much tonnage, as the receipts here have been so far behind distribution needs that there is practically no coal in yards in this city. The Baltimore Coal Exchange has held several meetings recently to discuss the proposed freight-rate increase and its application to the public, as well as the railroad administration rule which requires that coal consignments be delivered only on surrender of original bills of lading and payment of charges; with a certified check for 110 per cent. to be filed in case bill of lading is lost or delayed. The Exchange has been bitterly opposed to the application at this time of both the rule which raises freight rates and consequently the cost to the consumer of anthracite, and to the bill of lading restrictions before delivery of coal. The receipts of hard coal here are a great disappointment. For April, May and June the total deliveries here of hard coal will not total much more than 180,000 tons, which is below last year's receipts for the period. This in spite of the fact that the Maryland fuel administration had asked for about a 20 per cent. increase for the year and had been promised an allotment of 10 per cent. increase, is disappointing. With more than 300,000 tons on the books undelivered and with orders still pouring in and which will run to around 600,000 tons before summer is over, there is no chance apparently of giving the public anything like the two-thirds supply which had been planned. Some new method of curtailment in early deliveries may now be worked out.

Lake Markets

PITTSBURGH

More complaint of labor shortage. Expansion of draft age limits may help. Prospective shortage of coal increased.

There is more complaint of labor shortage, which is coming to be recognized as a greater restrictive influence than was estimated recently, the shortage of cars covering up the labor shortage. Scrutiny of conditions indicates that if full car supplies were furnished—miraculously furnished, according to the views of most operators—it would not be possible to produce much more coal.

Considerable interest has been taken in the representations of the Provost Marshal relative to expanding the draft age limits. Hopes are entertained that if there is such expansion the "work or fight" doctrine will be more vigorously carried out and it will of course have a wider scope, as taking in a larger proportion of the coal-mining labor. Much attention also is being directed to the liquor question, and it is held that the Washington authorities should take drastic action in this matter, as they have in so many others.

While coal production is in the main increasing slowly, it is not increasing as the requirements are increasing with the constant speeding up of war work, and serious shortages are now more clearly in prospect than they were a few weeks ago. The coal-mining industry should be seeing the palmy days of the year just at this time as regards production and that is not the case.

Complaint is made by many manufacturing consumers in the immediate Pittsburgh district that on account of their nearness to the mines they are required to take a considerable part of their supplies by truck, paying a trucking charge usually of $1 a ton, when their freight rate would be 40c. or less. Their nearness to coal mines thus operates to their disadvantage, as their cost is increased, while that of consumers with a straight rail shipment is unchanged.

There is only a moderate amount of free coal developing, and only in small lots. Brokers are readily able to collect their 15c. brokerage on such free coal as they can find. Regular prices remain as follows: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district.

TORONTO

Coal supply far short of requirements. Dealers refuse to accept orders. Outlook considered serious. Coal dealers' representative trying to receive additional deliveries.

The outlook for next winter's supply of coal is considered serious. Citizens who are in a position to pay for a supply are generally desirous of laying in stocks, not merely for fear of a shortage, but in anticipation of a rise in prices; but most of the dealers continue to refuse all fresh orders. It is estimated that the quantity of coal so far delivered this season is from 30 to 40 per cent. short of that on hand at this time last year. The order of the Fuel Controller limiting each consumer's supply to 70 per cent. of normal is generally well observed. H. A. Harrington, of the Coal Dealers' section of the Retail Merchants' Association, has gone to Pennsylvania to try and arrange for an increased supply for this city.

Quotations for best grades per short ton are as follows: Retail anthracite, egg, stove nut and grate, $10; pea, $9; bituminous steam, $8.50; slack, $7.50; domestic lump, $10; cannel, $13; wholesale f.o.b. cars at destination, three quarter lump, unprepared, $6.11; prepared, $6.31; slack, $5.18.

BUFFALO

Scarcity of anthracite locally is complaint. Bituminous moving about as usual. Conflicting reports as to miners working. Lake shipments keep up.

Bituminous—The situation does not change materially. Reports come in of cars discovered idle, but the fact seems to be that more coal is moving than ever before. From the Ohio ports come stories of lack of cars and vessels waiting, but this port is getting its fuel pretty promptly, which is all that it has to look after in the bituminous trade. The expectation of an advance in rail freights has increased the demand, but jobbers are not able to get any better supply. A great part of the coal goes from the mines to the consumer direct. While the jobbers are not discouraged, they are aware that they must wait for a change of conditions before they can do much business.

Buffalo appears to be getting an adequate supply of bituminous and more or less stocking up for winter is reported. Canada is still getting an oversupply in certain easily-reached sections and water shipments to the more remote St. Lawrence Valley are good.

The price of bituminous is based as before on the last general order, which makes the Buffalo figures $4.65 for thin-vein Allegheny Valley, all sizes; $4.45 for Pittsburgh lump; $4.20 for Pittsburgh mine-

run and $3.95 for Pittsburgh slack, all f.o.b., per net ton here. The advance in freight rates will necessitate a higher schedule as soon as it is in effect.

Anthracite—The local supply is still inadequate and does not increase. It is much smaller than it was early in the season. Nobody quite knows where it goes, but it is supposed to be taken by the Government for war purposes, possibly exported. The city consumers complain that orders given long ago are not filled. The shipping agents are not disturbed, as they find it easy to recall that after April or May it used to be a difficult matter to sell coal in any quantity till fall.

Householders who burn natural gas are pleased to see the order go out cutting off all consumers except families through the winter, though it is not easy to say what the supply will be now. The plan is to supplement the natural gas with artificial in very cold weather.

Lake shipments still run into six figures for the week, being mostly to the heads of the lakes, 50,900 tons to Chicago, 41,900 tons to Duluth or Superior, consignee's option, and 7000 tons each to Fort William and Port Arthur, total, 106,800 tons. Rates of freight are as formerly, with tonnage plenty, 60 and 65c. to Chicago, 48c. to Duluth, Fort William and Port Arthur.

DETROIT

Volume of receipts continues light in both bituminous and anthracite. Lake movement shows good average.

Bituminous—Basing calculations on present receipts, Detroit's winter coal supply is still far from being assured, in the opinion of local jobbers and wholesalers. Though weather conditions are favorable for transportation and nearly three months have elapsed during which coal should have been moving into the city in large volume, shipments much of the time have been disappointingly small and especially so during June, when receipts have scarcely equaled 50 per cent. of what dealers say should be their normal volume. With many of Detroit's great manufacturing establishments working at capacity or striving to increase production of munitions beyond normal capacity, the demand for steam coal continues active and steady, absorbing shipments as speedily as they are available. Free coal on tracks is comparatively unknown in the local market. Efforts of large consumers to put aside a reserve to aid in satisfying winter requirements have been only partly successful, owing to the necessity of satisfying needs for current consumption. Mine-run constitutes the larger part of the bituminous receipts, though slack and other sizes are arriving in small quantities. Domestic bituminous is not plentiful, dealers say.

Anthracite—Uncertainty concerning Detroit's anthracite supply is not yet relieved. The daily shipments received range around 30 or 35 cars, and few of the household consumers who are clamoring for supplies have been able, so far, to obtain hard coal. As there is virtually no coke and the market is denied smokeless coal, anxiety is increasing.

Lake Trade—Shipments of coal over lake routes have shown a moderate degree of improvement during the last week. Daily receipts at loading docks have been heavier. The movement for June is expected to exceed 3,000,000 tons.

COLUMBUS

The coal trade is firm in every particular. Demand for domestic, steam and lake tonnage is strong. The output is curtailed by car shortage in many mining districts.

Some car shortage is reported from certain mining districts, notably from eastern Ohio, which is curtailing the Ohio output. On the Hicken Valley and Toledo & Ohio Central the car supply was fair and consequently good production was reported. On the whole, however, production is falling behind anticipated figures and every effort is being made to speed up. The tone of the trade is generally satisfactory and indications point to a strong demand for the rest of the year.

The domestic trade is probably the strongest feature of the Ohio market. Retailers are anxious to buy both for present and deferred shipment. Consumers are now rushing their orders in order to avoid the higher retail prices which will prevail after the increase in freight rates take effect, June 25. The new rates will mean an advance from 20 to 35c. on the ton. Retail stocks are not large, and many are operating their yards from a hand-to-mouth basis. Pocahontas is quite scarce, as none mined east of Welsh is being shipped in this direction. There is still some West Virginia splints being sold, but the quantity is being reduced. Consumers are compelled to depend on Hocking Valley grades for their supply. Retail prices are firm at the Government levels, but an advance will be announced soon.

The steam business is active in every particular. Buying by both the larger and smaller users is reported, and many of the consumers are anxious to increase their storage stocks. Railroads are buying more than ever before as their freight movement is extra heavy. It is estimated that one-third of the output of certain fields is taken for railroad consumption. Another incentive has been the necessary advances to take care of increased rates, which will especially affect large users.

The lake trade is still active in every way. Many of the larger operations are now using their entire output for lake shipment. This necessarily reduces the available stocks for steam and domestic use. The vessel movement is generally good and a considerable tonnage is going to the Northwest. On the whole, however, shipments are behind the schedule, principally because of the late opening of navigation.

CINCINNATI

Business is settling down to a steady volume of deliveries, both local and for the lakes, limited only by the ability of the railroads to handle the coal.

With the weather definitely settled down to the summer, disposing of domestic consumption for heating purposes, the coal trade is getting into the harness for the delivery of the biggest volume of summer sales in its history. The Northwest movement via the Lake ports promises to assume unprecedented proportions, industrial consumption in that section naturally being on a par with the large consumption elsewhere, which is the outstanding reason for the present enormous demand for fuel. At the same time, enough coal is being delivered to local dealers to enable them to make some deliveries against the orders of their domestic customers, who are endeavoring to store coal for winter consumption. Industries in this section are being well taken care of as to immediate requirements, their chief concern still being the matter of their winter's supply, in view of the difficulty of storing anything like an adequate amount. Both the present limited supply of coal and the fact that a supply for any extended period would require enormous storage facilities or yard space seem to operate against much success in preparing for winter consumption; but every effort is being made in this direction, as both the trade and industrial consumers realize that every ton stored now will to that extent relieve the inevitable emergency of the winter.

LOUISVILLE

Demand considerable in excess of supplies, with no surplus stocks being laid up by jobbers or retailers. Active local demand for eastern Kentucky coal is being filled with western.

Anticipating a sharp advance in coal prices due to increased freight rates, consumers have been placing heavy orders for domestic coal, the demand being so keen that most of the local retail yards are empty, and the dealers are delivering direct from the cars. There is a shortage of teams, drivers and trucks, and this is holding back delivery somewhat.

The local branch of the fuel administration has requested the residents to go ahead and accept western Kentucky coal, instead of awaiting deliveries of eastern Kentucky stock, which is very indefinite. Many consumers are opposed to the lower grade western coal, but as the eastern Kentucky grades are moving to the by-products plants, the cotton mills and into other zones largely, practically no eastern Kentucky coal is to be had on this market. In view of the fact that western can be readily obtained the Fuel Administration is pushing immediate stocking on this grade, at the same time calling attention to the fact that the needs of the Government plant at Nashville this winter will be so heavy that there will be a big increase in the demand for western Kentucky. As a result stocking has received impetus. There has not been any particular change in the production situation in either section of the state. The car supply is holding up much better, but labor continues scarce and hard to secure, and men who went into other lines are drifting back slowly.

Eastern Kentucky mining companies have been endeavoring to buy all of the coal mined in that district that they can secure in order to take care of Louisville consumers, and the local jobbers and retailers are making every effort to obtain supplies, with the result that not even the small mines are having any trouble whatever in disposing of all of the coal they can produce.

BIRMINGHAM

Marked activity in domestic distribution. Steam demand continues at the maximum. Supply of both grades much below requirements. Little improvement noted in production.

The records for the month of June will show an appreciable gain over the month of May in domestic coal stored. The Fuel Administration has issued practically double the number of permits for car-lot shipments as compared with the same period in May. Doubtless the anticipated increase of freight rates was responsible in a measure for the increased orders. Distributors are experiencing a strong demand. Receipts continue light and unsatisfactory, due to the hampered production.

The need for an increased supply of steam coal is imperative in this market. The demand has not slackened in the least while on the other hand production is not up to the output which was being obtained a month or more ago. Industries classified as non-essential are receiving an irregular and inadequate supply. The Southern Ry. is taking 51 per cent. of the output of operations which it serves.

The Gulf States Steel Co. assumed charge of the operations of Sayre mines in the western part of Jefferson County, July 1, having purchased this property several months ago. The mines and coke ovens at this operation have been under lease to the Sloss-Sheffield Steel and Iron Co. for the past several years, the agreement covering the operation of the properties expiring June 30.

Coke

CONNELLSVILLE

Furnace coke contracts renewed. Occasional lots of free coke. No price changes in prospect.

With only one notable exception, such few contracts for blast furnace coke as expire June 30 have been renewed between the same parties. The contracts as a rule were at the Government limit, and all new contracts are of course on that basis. The one important exception was the coke that has been going to the Youngstown Sheet and Tube Co., which is building 102 additional byproduct coke ovens, to be put in operation about Aug. 1, releasing between 15,000 and 20,000 tons a month. This coke, when available, probably about Aug. 1, has been sold to other consumers at the Government limit.

In the case of foundry coke quite a number of contracts expire and quite a number of these have not been renewed, operators seeing a good market from week to week for their foundry coke, and some of them therefore prefer not to tie up with individual foundry interests, whose actual consuming rate, in these times, may prove more or less uncertain.

The business of the coke brokers has practically disappeared, first because nearly all the furnaces that are in need of extra coke keep representatives of their own traveling through the region to pick up coke, so that they get it before brokers have an opportunity to hear of it, and second, because brokers cannot charge a commission unless they secure it from sellers, and sellers have no occasion to offer a commission. There is a fair volume of business done in spot coke from week to week in direct transactions. The market remains quotable as formerly: Furnace, $6; foundry, 72-hour selected, $7; crushed, over 1 in., $7.30 per net ton at ovens. The War Industries Board has fixed iron and steel prices for the third quarter of the year at the schedule expiring June 30, with an advance of 45c. a ton in iron ore, by reason of the freight-rate advance. Coke prices are fixed by the Fuel Administration, but there is no likelihood of any change until fundamental conditions change, and with pig-iron prices set for another three months there is not the least likelihood of any change in coke prices in the near future.

The Connellsville "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended June 15 at 342,970 tons, an increase of 1950 tons. Production has been at substantially the same level for eight weeks.

Buffalo—The demand is about as before, but reports from Canada say that it is not so heavy as formerly. The regulation oven price of $7 for foundry and $6 for fur-

nace holds, with $2 freight added, but next to none sells in the open market. Canada pays no duty, but pays 7½ per cent. of the mine price as Canadian war tax. Iron ore receipts by lake continue, the amount for the week being 262,564 gross tons. Reports from Ohio predict that June will be a record month on this movement. Cars are not plenty enough to move the ore promptly that is consigned to outside points.

Middle Western

GENERAL REVIEW

The supply of cars seems to be sufficient to take care of all the coal that can be produced. Outlook encouraging.

Reports from all the producing centers in the Middle West seem to indicate that the railroads are at last able to furnish a sufficient supply of cars to handle all the coal that can be produced. In fact the Illinois Central is reported to have had far more cars available for loading than were needed the past week. This is unusual. In the preceding several months this line has been charged with being one of the principal offenders. During the past week production reached the highest level heretofore known, a direct result of increased car supply, and if the miners could now be induced to work full time no doubt production would be further increased. Regardless of the fact that more coal was mined and shipped last week than in any previous week, the demand for prompt shipment still is a source of worry to the sales managers throughout the country. The householders are buying as heavily as though it were winter, a direct result of the activities of the Fuel Administration's "Buy Your Coal Now" campaign. Another factor that has caused heavy buying is the putting into effect on the 25th inst. of an advance freight rate, ranging from 15 to 35c. per ton higher than the present rate.

Steam users, including the railroads, have not as yet had an opportunity to store much coal. This has caused more or less worry among some consumers, who fear that they will not be able to get some stock ahead prior to the fall and winter months, and that they will be caught as they were last year, without coal. Operators in a position to know say that with the present flow of coal to the dealers for another month or six weeks domestic users will be fairly taken care of, and they then will be in a position to give steam coal substantially heavier shipments.

CHICAGO

The demand for domestic sizes continues to be in excess of supply.

The response made by the householders to the request that they buy coal early has produced satisfactory results to date. Never before in the memory of the oldest dealer has there been so insistent a clamor for coal as now. The demand is so heavy, in fact, that dealers are far behind and have not been able to accumulate any surplus stock.

The market on screenings is still without any strong indications, and considerable fine coal has been moved through jobbers at 15c. per ton off the Government price; not, however, to the extent that any material reduction resulted to the ultimate user.

There is no change in the hard-coal situation, householders having placed their orders with the dealers, who in turn have placed the orders with shippers. All wait impatiently for some indication that the coal will be forthcoming at a later date. So far the receipts have not met with earlier expectations.

Quotations in the Chicago market are as follows, per net ton f. o. b. at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, LaSalle, Bureau and Will.
Steam lump	$2.55@2.70	$2.55@2.70	$2.95@3.10	$2.55@2.70	$2.55@2.70	$3.25@3.40
Domestic lump	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Egg or furnace	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Small egg or nut	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Stove	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Chestnut	2.55@2.70	2.55@2.70	.....	2.55@2.70	2.55@2.70	3.25@3.40
Pea	2.55@2.70	2.55@2.70	.....	2.55@2.70	2.55@2.70	.....
Washed egg	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Washed stove	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Washed nut	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Mine-run	2.35@2.50	2.35@2.50	2.75@2.90	2.35@2.50	2.35@2.50	3.00@3.15
Screenings	2.05@2.20	2.05@2.20	2.35@2.50	2.05@2.20	2.05@2.20	2.75@2.90
Washed slack	2.05@2.20	.....	.....	2.05@2.20	2.05@2.20	2.75@2.90

MILWAUKEE

Anthracite price schedule not yet received. Deliveries now being made by all dock yards and dealers.

The State fuel office is at a loss to understand why dock prices at Milwaukee on anthracite coal have not been formulated. It is understood that they were dispatched from Washington, but thus far they have not shown up. Deliveries of hard coal are in full swing, however, and the situation is more satisfactory in consequence.

Since last week's report an additional cargo of 8500 tons of anthracite has been docked, making the total receipts of hard coal since the opening of navigation 144,735 tons. A great deal of this is now in the bins of consumers. During the same period 736,683 tons of soft coal was received.

Every effort is being made to increase the use of soft coal. Coal dealers throughout the state have been notified that threshers should be supplied with mine-run coal or grades of steam coal other than the domestic sizes of bituminous coal which they have been in the habit of using in the past. Manufacturing concerns which have been restricted to 50 per cent. of their normal supply of coal are endeavoring to secure more by promising to use inferior grades than they formerly used, but thus far have met with refusal. Some firms which have stored more than the regulation amount will also be held to the rule.

ST. LOUIS

Fairly active market on Standard grades the first time in many weeks previous to the 25th. Lagging market follows. Car supply showing up poorly. Screening market rather weak and good demand for domestic sizes from high-grade fields. Local retail buying normal. Labor shortage growing acute. No Eastern coals and light tonnage of Arkansas.

The week previous to June 25 the local market was fairly active. Not only because the freight rate advanced 25 per cent. on the 25th, but for the past week there has been an unusually heavy car shortage. This followed a few weeks of car supply that was normal, and large buyers in an endeavor to force the market laid off buying so that when the car shortage struck them they were caught short. This is especially true of the mine-run and screened sizes. Screenings continue weak from the Standard field, going at about $1.25 to $1.35.

The recent activity did not stimulate the Standard market to any great extent as regards price; 2-in. lump went around $2.20, with mine-run at about $2. In some sections of the Standard field the past week mines have been idle on account of no business, contrary to operating reports. In the high-grade fields there has been a continued effort on the part of the operators to increase production by using car supply, but the labor shortage there continues, and the falling off of the equipment the past week showed a tonnage loss.

In the Mt. Olive field the demand still continues to meet with the production. The mines are working perhaps better than in the other fields, and there is not the decrease in the tonnage noticeable here on account of labor shortage as in other sections.

Following the large amount of coal stored during the low freight rate the expected lull in business in the Standard field was natural and the end of the present week will see some extremely low prices. The only ray of hope for the Standard field was a tip from Washington that the Government had ruled against the railroads having any more Williamson or Franklin County coal for locomotive purposes, with a few modifications. This is going to throw a vast tonnage of high-grade coal into the industrial and domestic market, where it rightfully belongs. It has been almost a crime that the railroads should grab the best coal produced in the State of Illinois while the City of Chicago and other large cities were in dire need of this low-volatile fuel, when the railroads could just as conveniently, and almost as economically, use the high volatile fuels.

This will force the railroads to take a large tonnage of their coal from the Standard and Mt. Olive fields. This will give the men steady work on account of no orders, and it will retain the men in the Standard mines that are now leaving to seek employment in other fields that work steadier, or to go to big industrial plants in the cities. It will strengthen the Standard market and force the Government maximum price on these coals which for several months now have been selling below that price.

The domestic demand locally is light. This is because orders are many weeks behind and retailers are having trouble effecting deliveries. Labor is short and independent, and an effort has been made by the retailers' association to have the Government take some action compelling employees of coal companies to work at least five days a week as against three and four at the present time.

Coke, which will largely supplant anthracite coal in this market, has been selling at 60c. under the Government price, but effective June 25 it went to the Government price, which with the increased freight rate will increase the price of coke to the domestic consumers about 95c. a ton.

The Chamber of Commerce in St. Louis prepared the latter part of the week to put up a vigorous fight at Washington for a specified tonnage of anthracite coal for certain places in St. Louis that must have anthracite coal or suspend operations, and also for a number of homes in the city that are equipped to burn nothing but anthracite and which cannot secure other equipment for many months to come.

Coöperating with the Chamber of Commerce will be the Coal Service Bureau of St. Louis and the Missouri State Retail Coal Merchants' Association, as well as the Manufacturers' Association and other organizations of similar nature.

The prevailing market is, per net ton f.o.b. mines:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.70	$2.55@2.70	$2.40@2.70
3x6-in. egg	2.55@2.70	2.55@2.70	2.35@2.55
2x3-in. nut	2.55@2.70	2.55@2.70	2.35@2.55
No. 2 nut	2.55@2.70	2.55@2.70	.....
No. 3 nut	2.55@2.70	2.55@2.70	.....
No. 4 nut	2.55@2.70	2.55@2.70	.....
No. 5 nut	2.05@2.20	2.05@2.20	.....
2-in. scrgs	2.05@2.20	2.05@2.20	1.25@1.50
2-in. lump	.....	.....	2.25@2.40
3-in. lump	.....	.....	2.25@2.40
Steam egg	.....	.....	2.25@2.40
Mine run	2.35@2.50	2.35@2.50	1.85@2.00
Washed:			
No. 1	2.75@2.90	2.75@2.90	.....
No. 2	2.75@2.90	2.75@2.90	.....
No. 3	2.55@2.75	2.55@2.75	.....
No. 4	2.55@2.75	2.55@2.75	.....
No. 5	2.05@2.20	2.05@2.20	.....

Williamson and Franklin County rate is $1.10; Duquoin field, $1; Standard and Mt. Olive fields, 95c.

SEATTLE

Coal situation not promising, public not buying and mines operating only part of time. Mine convention asks national fuel head to investigate matter.

At the twelfth annual meeting of District No. 10 of the United Mine Workers of America, resolutions were passed by the representatives of the 32 state local unions, which have a membership of 5000, asking the national fuel administrator to make a thorough investigation of the coal situation in this state. It is pointed out that in April, when the mines of Washington began to slow down their production, between 800 and 1000 skilled workmen left the mines to obtain steady employment. Many of the mines are still operating only part time. If the coal business should pick up within the next few months the mines could not be worked to full capacity on account of the labor loss. The mines of Issaquah, Newcastle, the Cumberland district, some Pierce County districts and the southwestern Washington district, all of which produce mainly domestic coal, have of recent months been operating only one to three days a week. The public is not buying coal and nothing seems able to stir them to a full realization that early buying is the only way to prevent a fuel famine here, though all hope that there will be enough coal to meet the demand was given up several weeks ago. Coal prices, which recently took another advance in Seattle and resulted in many demands for an investigation, will shortly take another advance, as new freight rates went into effect on June 25 and teamsters are demanding larger wages. There is a railroad car shortage ahead which is going to hamper the delivery of coal this winter in the Northwest still further. The coal situation in Washington is not promising for the coming winter.